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Progress in the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States

Report of the Secretary-General*

Contents

		Paragraphs	Page
I.	Introduction	1–3	3
II.	Overview of progress achieved and external assistance trends	4–14	3
	A. Progress achieved	4–9	3
	B. External assistance trends	10–14	5
III.	Problems and constraints encountered in the process of implementation	15–20	6
IV.	Looking to the future	21–36	9
	A. Major emerging sustainable development concerns and problems	21–24	9
	B. Other major issues of particular concern to small island developing States	25–32	10
	C. Sectoral and cross-sectoral priorities	33–35	12
	D. Suggestions for the work programme of the Commission on Sustainable Development for the period 2000–2004	36	13

* The report reviews the status of the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States. It is the result of consultation and information exchange between United Nations agencies and interested regional organizations. It had benefited from the outcomes of four regional meetings: the Ministerial Meeting of the Caribbean Small Island Developing States, 10–14 November 1997; the Ministerial Meeting of African Small Island Developing States, 7–10 July 1998; the Roundtable of Pacific Island Ministers on Sustainable Development, 17 November 1998; and the Ministerial Meeting of the Indian Ocean, Mediterranean and Atlantic Ocean Small Island Developing States, 24–27 November 1998.

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Annexes

I. Selected illustrative examples of significant initiatives by small island developing States at the national, regional and international levels 15

II. Priorities for future action identified by small island developing States at the regional level 19

I. Introduction

1. The General Assembly, at its nineteenth special session, in 1997, decided to convene a two-day special session immediately preceding the Assembly's fifty-fourth session, in 1999, for a full and comprehensive review and appraisal of the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States, (resolution S-19/2, annex). The Assembly also decided to request the Commission on Sustainable Development to carry out, at its seventh session, a full review of the Programme of Action[1] in preparation for the special session. Subsequently, at its fifty-third session, it reaffirmed the importance of the special session and its preparatory process. The present report has been prepared to facilitate the review by the Commission.

2. Section II of the present report provides an overall assessment of progress achieved in the implementation of the Programme of Action and outlines recent trends in external resource flows in support of the efforts of small island developing States at implementing it. Section III gives an account of the constraints encountered in the implementation process. Section IV highlights some emerging problems and issues of particular concern to small island developing States, sets out priority issues for future action as identified by small island developing States through regional and subregional expert and ministerial meetings, and provides some recommendations for the Commission's programme of work for the next five years.

3. The report is complemented by 16 addenda, each focusing on one major theme of the Programme of Action. The addenda are updates of reports previously submitted to the Commission. For a comprehensive view of progress made at the sectoral and cross-sectoral levels and of the variety of sectoral and cross-sectoral issues, sector-specific constraints and action needed, the report should be read in conjunction with the addenda.

II. Overview of progress achieved and external assistance trends

A. Progress achieved

4. While much remains to be done to attain the objectives of the Programme of Action, during the five years since the Global Conference on the Sustainable Development of Small Island Developing States, held in Barbados in 1994, a great deal of effort has been made by small island developing States at the national and regional levels with international support in all small island developing States regions resulting in perceptible progress in implementation. Much of the effort thus far has centred on understanding the crucial role of sound environmental management for the sustainability of socio-economic development; on coming to grips with the multitude of environmental issues calling for attention; on raising public awareness of the importance of protecting environmental assets; and on the exploration of strategies, policies and measures for integrating environmental dimensions into socio-economic planning and development practices. To those ends, numerous seminars, workshops, expert meetings, conferences and regional and subregional ministerial meetings have been held. Some of these meetings have deliberated on general sustainable development concepts and issues; others have explored sectoral and subsectoral issues. These activities have spawned a vast literature and have contributed immensely to an enhanced understanding of sustainable development issues and to greater environmental consciousness across the small island developing States regions. They have also contributed, if thus far to a lesser degree, to the recognition of the need for partnership between government and

civil society in setting standards, preparing development action plans and formulating policies.

5. While the deliberative process is still ongoing, the greater understanding of the implications of environmental protection for the sustainability of socio-economic development and for the improvement of the quality of life has induced concrete actions in small island developing States to begin the implementation of the Programme of Action. Although commitments of resources and political efforts to implement the Programme have varied from State to State, by and large they have made perceptible gains at the national and regional levels.

6. At the national level, small island developing States generally have taken steps to (a) formulate national environmental strategies, sector strategies, and action plans; (b) carry out legislative reforms to meet desired environmental norms; (c) reform policies and establish or revise regulatory regimes to induce behavioural changes; (d) establish national planning and policy-making institutions — ministries, development councils, environmental units and so on — with responsibilities for environmental management.

7. The national institutional, planning and policy reforms that were carried out after considerable deliberation have begun to produce some concrete results for the environment. These results, however, cannot be documented comprehensively and meaningfully at the present time for a variety of reasons, the most important of which are the following: implementation has barely begun and the impacts on environmental indicators are not as yet clearly discernible; data on sectoral and subsectoral action and the consequent impact is as yet fragmentary; implementation has been spread over a number of sectors in accordance with national priorities and resource availability; baseline data for small island developing States on major environmental indicators is not available yet, which makes assessment of progress or lack thereof difficult. The indirect evidence, which is itself sketchy, is that small island developing States, each one at its own pace, are increasingly using a variety of economic instruments and environmental tools such as the environmental impact assessment (EIA) and geographic information systems (GIS), strengthening regulations, reforming relevant policies, and implementing priority projects at the sectoral and subsectoral levels to prevent adverse impacts on the environment. Annex I, section A, provides some illustrative examples of initiatives of small island developing States at the national level.

8. At the regional level, efforts have been made in all small island developing States regions to strengthen regional institutions or to create new ones in order to enhance regional cooperation in, and coordination of, the implementation of the Programme of Action. A number of regional organizations have taken internal measures to restructure their operations in order to increase their effectiveness and efficiency. Regional and subregional organizations have become actively involved in furthering the implementation of the Programme through a variety of activities, including research, provision of policy and other technical advice to member States and coordination of implementation at the regional level. In the Pacific, where a number of organizations, each with a particular focus, are involved in the implementation of the Programme, a coordination mechanism, namely, the South Pacific Organizations Coordinating Committee has been established in order to avoid duplication of efforts and to harmonize the activities of the various regional organizations. In the Pacific, regional cooperation efforts of small island developing States regional institutions have been greatly assisted by the active role of the Economic and Social Commission for Asia and the Pacific (ESCAP) and its Pacific Operations Centre. Likewise, in the Caribbean, a number of regional and subregional organizations are actively pursuing the goals of the Programme of Action. Since the Barbados Conference, the secretariats of

the Economic Commission for Latin America and the Caribbean (ECLAC)/Caribbean Development and Cooperation Committee (CDCC) and the Caribbean Community (CARICOM) have been jointly serving as the regional coordination mechanism *ad interim* for the implementation of the Programme, and have consistently stressed the need for a permanent regional coordination mechanism in order to ensure its operational effectiveness. As far as the small island developing States of the Indian Ocean, Mediterranean and the Atlantic Ocean are concerned, the initiative to promote cooperation among them was launched only recently, in the second half of 1998. Thus far only a subregional organization, the Indian Ocean Commission whose membership includes three small island developing States located in the western Indian Ocean, has played an active role in the implementation of the Programme. In their recent initiative, however, the Indian Ocean, Mediterranean and Atlantic Ocean small island developing States have proposed to create an institution — an Indian Ocean, Mediterranean and Atlantic Ocean small island developing States centre — with international support to promote cooperation among them and to coordinate the implementation of the Programme. While the regional institutions of small island developing States are playing an active role in furthering the achievement of the goals of the Programme of Action, they operate under severe human-resource and financial constraints and are unable to carry out their mandates effectively. Annex I, section B, provides some illustrative examples of initiatives taken by small island developing States at the regional level.

9. At the international level, small island developing States have made strenuous efforts to persuade the international community to take earnest and effective measures to arrest global warming and the consequent rise in sea level, and changes in climatic and weather patterns. By and large they have also made efforts, sometimes with international assistance, to ratify major multilateral agreements and international legal instruments, and commitments to comply with their provisions with the necessary international support. Those that have not done so yet need to take action without further delay to ratify all international cooperative arrangements. Annex I, section C, provides a snapshot view of their efforts at cooperation for sustainable development at the international level.

B. External assistance trends

10. The implementation of the Programme of Action is explicitly predicated on a tripartite partnership at the national, regional and international levels. The present section presents a brief account of the role played by the international community since the Barbados Conference in supporting the implementation of the Programme at the national and regional levels. A more detailed account, based on data obtained from the Development Assistance Committee (DAC) of the Organisation for Economic Cooperation and Development, of financial and technical support provided by the international community is contained in the report of the Secretary-General (E/CN.17/1999/7), which is before the Commission at its present session. A comprehensive account of sector-specific projects undertaken by the international community in support of the Programme of Action can be found in the addenda to the present report and in the report of the Secretary-General submitted to the General Assembly at its fifty-third session (A/53/358).

11. Total bilateral commitments in 1996, the latest year for which complete data are available, increased as compared with 1992; and was above the average for the period 1992–1995. However, the 1996 level did not represent the highest recorded for this period. Total multilateral commitments in 1996 were also above the 1992 level, but below the average for the period 1992–1995. In terms of coverage of programme areas at the global level by both bilateral and multilateral commitments, those that received large shares were

human resources development, transport and communications, freshwater resources, land resources, coastal and marine resources and energy resources.

12. Insofar as net bilateral disbursements of resources (grants and net concessional loans) are concerned, the 1996 volume fell below the levels of the preceding two years, largely owing to the fall in official development assistance (ODA) flows to one country, but it was higher than the 1993 level. A more definitive assessment of the trend in bilateral efforts in support of the implementation of the Programme of Action must await the availability of complete data for 1997 and 1998. Multilateral disbursements in 1996 were down from 1995, but remained above the average for the period 1993–1995.

13. The data available indicate that nominal overall resource flows, bilateral and multilateral combined, peaked in 1994 and declined thereafter in terms of both commitments and disbursements. In 1994, overall commitments reached US$ 1,419 million and overall disbursements US$ 2,335 million; in 1996 they stood at US$ 1,178 million and US$ 2,158 million, respectively. In line with past trends, multilateral disbursements of ODA resources were more evenly distributed among small island developing States; bilateral ODA, on the other hand, continued by and large to be driven by historical and geographical ties.

14. Taking into account the fact that data on some cross-sectoral areas such as national institutions and administrative capacity, regional institutions and technical cooperation, and some data on science and technology are subsumed under sectoral areas in the revised DAC purpose classification codes on which the analysis of the data is based, one can conclude that a number of important programme areas have not yet received adequate attention from the international community. The major ones include climate change and sea level rise, biodiversity resources, management of wastes and natural and environmental disasters. It is imperative that programme areas that have so far received larger shares of external resources continue to be accorded adequate attention and those areas that have so far received little external support be given greater attention. A mere shift in sectoral allocation of ODA resources will not have the a significant impact in advancing the implementation of the Programme of Action. Effective and timely implementation will call for an intensification of efforts at providing external development assistance to small island developing States through new and additional commitments and disbursements of resources. This will be of the utmost importance in the years to come in sustaining the momentum generated in small island developing States at the national and regional levels, particularly in view of the tightening financial situation in several of them.

III. Problems and constraints encountered in the process of implementation

15. Small island developing States have made a good beginning in the process of building institutional capacity for sustainable development, in formulating strategies and action plans, and in carrying out policy reforms, but they have encountered a number of problems and constraints which have slowed down or impeded the process of implementation. During the period under review, a number of small island developing States in all regions have been affected by adverse economic developments which have impaired their financial capacity to implement even priority sustainable development measures. This is particularly true for the Pacific small island developing States, where a combination of internal and external factors have impinged adversely on their economic performance. The need for carrying out adjustment measures in some small island developing States, such as Cook Islands, Fiji, Papua New Guinea, Solomon Islands and Vanuatu, to correct economic imbalances rooted

in the past, combined with the recent economic and financial crisis in Asia, have had both direct and indirect economic impacts affecting domestic output, prices of export commodities and export earnings, incomes from tourism and foreign investments. Pacific small island developing States generally are feeling the indirect impacts of the Asian crisis through decelerating growth in the economies of Australia and New Zealand to which their economies are closely interlinked. The Asian crisis has actually had an adverse impact on the economies of small island developing States generally. In addition, drought conditions have appeared in several Pacific small island developing States and in several instances have not been sufficiently relieved by annual wet seasons with the result that annual droughts have become progressively more severe. The adverse impacts are reflected in declines in agricultural production and exacerbation of water shortages. The most tragic disaster affecting small island developing States was a tsunami in 1998 on the north coast of Papua New Guinea. In the Caribbean, a number of small island developing States and areas, including Antigua and Barbuda, Dominica, Saint Kitts and Nevis and the United States Virgin Islands, have suffered severe damage from hurricanes.

16. Although not necessarily to the same degree, all small island developing States experience constraints in the following areas: finance, skilled human resources for the implementation of sustainable development measures, and sustainable development institutions and administrative capacity. A common hurdle faced by small island developing States in all regions is the insufficiency of financial resources relative to the enormity of the tasks to be accomplished. As mentioned above, for a number of them, the availability of domestic financial resources has actually been diminished by adverse economic developments and natural disasters. Many critically needed infrastructural projects that require large investments such as in air and maritime transport, adaptation to sea level rise, recycling and sound disposal of wastes, tourism infrastructure, road and telecommunication infrastructure lie beyond the resources of most small island developing States. For instance, the Caribbean small island developing States have pointed out that financial constraints present insurmountable handicaps to essential effort at the establishment and strengthening of infrastructure, institutions and capacity-building. Such handicaps are at least as severe in most small island developing States in the other regions. While most small island developing States have actively participated in international and regional deliberations on sustainable development, committed themselves to international and regional legal instruments and undertaken regional initiatives and arrangements, the lack of resources has seriously undermined their ability to live up to their commitments. Participation in international and regional arrangements allows them to pursue mutually complementary objectives in a holistic manner and to benefit from the synergy generated, but it also burdens them with a multitude of obligations which further stretch their limited resources, both human and financial. Many small island developing States simply do not have the financial means to meet their international obligations without adequate financial and technical support from the international community.

17. Dealing effectively with environmental problems calls for adequate human resources, not only in size but also, and more important, in the range of skills required and the level of technical sophistication. Clearly most small island developing States are constrained by small population size and therefore a small labour force. In spite of efforts, in many instances with external assistance, opportunities for higher education for sustainable development including for training in requisite specialized skills are sorely inadequate in most small island developing States although the foundation for developing such skills, in terms of basic education, exists in most of them. Sustainable development calls for training in a large number of technical skills and cannot be effectively pursued with a labour force that is merely literate at a basic level. For instance, problems of water supply in terms of both

quantity and quality, environmentally sound management of solid and liquid wastes, adaptation to climate change and sea level rise, integrated management of coastal zones, prevention or minimization of natural and environmental disasters among others, all call for specific skills, without which small island developing States — even with the highest level of political will — cannot hope to solve them. In recognition of the difficulty of building adequate levels of skills at the national level, small island developing States, particularly in the Pacific and the Caribbean, have established regional institutions by pooling their resources or fashioned new forms of collaboration among existing ones. These institutions are engaged at present in providing useful services in research, and policy advice and intra-regional coordination within the scope of resources that have been made available to them by member States and the international community, but they have yet to be mandated and provided with human and financial resources to launch programmes for training in the requisite technical skills. As a matter of fact, they need to enhance their own technical capabilities to fully meet the demands of their current mandates.

18. In addition to finance and human resources, small island developing States are constrained by the inadequacy of institutional infrastructure and administrative capacity, which is in effect a reflection of constraints posed by both financial and human resources. Effective implementation of the Programme of Action calls for adequate institutions and administrative capacity to design, implement and oversee the implementation of national strategies and policies and action plans, and to enforce environmental legislation and regulations. Many small island developing States are too small and simply do not have the manpower needed to develop a critical mass of technically qualified staff to man even the most critically needed institutions. Due to size in some, and generally due to the imperatives of sound taxation and budgetary policies, it is difficult to establish and fund the government structures and associated institutions essential for effective resource management. At the national level, efforts have been made to set up institutions such as ministries, development councils and environment units, but these are as yet rudimentary and need time to build up specialized staff proportionate to their tasks. They also need adequate budgets to function effectively, which at present is not the case. An example of a major programme area that is seriously affected by inadequate institutional capacity is coastal and marine resources. Integrated Coastal Area Management (ICAM) has not yet been successfully implemented because the system requires a minimum number of qualified individuals and appropriate institutions, although several countries have expressed the desirability of establishing specialized units for this purpose.

19. Small island developing States in all regions are hampered by the lack of proper institutional and administrative capacity not only to meet the demands of natural resource management but also to handle specialized demands emanating from obligations of international conventions and agreements, such as the United Nations Framework Convention on Climate Change, the Convention on Biological Diversity, the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, the United Nations Convention on the Law of the Sea and the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, the Food and Agriculture Organization of the United Nations (FAO) Code of Conduct for Responsible Fisheries and the International Coral Reef Initiative, and to handle negotiations of international treaties and agreements effectively.

20. In some small island developing States, sectoral management institutions for particular sectors, such as waste management, have been established. That is a step in the right direction, but such institutions need to be nurtured and provided with adequate resources

to achieve their goals. Institutions for training in appropriate specialized skills, which are absolutely necessary to staff national institutions for sustainable development, have yet to be established in most small island developing States, although some of them have begun to include in their tertiary-level curriculum some courses on natural resource management. In the very small island developing States, it may not be realistic to aim for the establishment of several specialized sectoral resource management and training institutions. These countries would probably need to develop effective multisectoral institutions staffed by experts trained overseas.

IV. Looking to the future

A. Major emerging sustainable development concerns and problems

21. In the Pacific, the Caribbean and the Indian Ocean, there is growing concern about the continued deterioration of the marine environment. Small island developing States in those regions face a range of problems that have increased in severity. The major ones include marine spills — oils, chemicals and other hazardous materials; shipborne wastes — oil, sewage and garbage; sand extraction, seabed mining, transport of nuclear materials and watershed destabilization. They are concerned about the effects of these problems on marine biodiversity, human health and general ecological and economic implications in addition to the costs of expensive clean-ups and remediation requirements when accidents occur.

22. In all small island developing States regions the problem of freshwater availability is worsening, characterized by constant shortages and/or deteriorating quality with adverse consequences for agricultural production and human health. The problem is exacerbated by the growing demand for water of the expanding tourism industry. Intensive groundwater extraction is lowering groundwater tables to levels that allow saline intrusion. Increased quantities of untreated or partially treated domestic wastes and industrial effluents are posing a threat not only to groundwater aquifers but also to coastal zones. In addition to freshwater, in a number of small island developing States land degradation is increasing owing to intensified competition for land use. The problem is particularly acute in the Caribbean and the Indian Ocean, Mediterranean and Atlantic Ocean small island developing States. In these regions, intensification of land use and land-based nearshore marine pollution are increasingly endangering biodiversity resources, and arrangements for reintroducing biogenetic resources following disasters are generally lacking.

23. In a number of small island developing States in various regions, the tightening financial situation is leading to a de-emphasis of sustainable development programmes and a renewed emphasis on improving short-term economic performance. Another important emerging problem in small island developing States generally, unrelated to finance, concerns the lack of systematic coordination in the field, which is giving rise to difficulties in managing the implementation of projects where collaboration among a number of United Nations and other organizations is involved.

24. Small island developing States generally are experiencing an intensification of natural disasters — storm surges, landslides, extensive floods, and recurrent droughts attributable to the El Niño phenomenon. In the Pacific, a number of small island developing States whose agriculture has been affected by extended drought caused by El Niño are envisaging the possibility of large-scale rural-urban migration in the foreseeable future unless their agricultural performance is quickly restored to pre-El Niño levels.

B. Other major issues of particular concern to small island developing States

25. Small island developing States in all regions are concerned about a number of specific issues in addition to those discussed above. The major ones include (a) their economic and ecological fragility and vulnerability to exogenous shocks; (b) globalization of production, distribution and finance and the need to adjust to the new emerging structures; (c) trade liberalization and the need to restructure the export sector; (d) transfer of environmentally sound technologies; (e) adaptation to climate change and sea level rise; (f) the operationalization of the Small Island Developing States Network (SIDSNET); and (g) the operationalization of the Small Island Developing States Technical Cooperation Programme (SIDSTAP).

26. In response to the call of the Programme of Action, the General Assembly and the Commission on Sustainable Development, work has been initiated by the Secretariat on the identification and quantification of the factors underlying the vulnerability of small island developing States to external economic shocks and natural and environmental disasters (see the report of the Secretary-General on the development of a vulnerability index for small island developing States (A/53/65–E/1998/5)). A considerable amount of work on the subject matter has also been done by the Commonwealth Secretariat over an extended period of time, most recently in collaboration with the World Bank and the United Nations Conference on Trade and Development. Thus far, owing to various conceptual, methodological and data-related problems, no single satisfactory quantitative measure of vulnerability or vulnerability index has emerged. In the United Nations system, the Committee for Development Policy is currently engaged in the development of a vulnerability index that could be used as one of the criteria for the identification of the least developed among the developing countries. For small island developing States, the importance of a quantitative measure that will bring out their vulnerability is twofold: to serve as an aid in planning to minimize their vulnerability and as a criterion for access to external concessional sources of assistance.

27. Globalization of production, distribution and finance has expanded considerably since the Barbados Conference. While it has offered new opportunities to countries that have the necessary capacity and flexibility in terms of human resources, technology and natural resource endowments, it has bypassed a number of small island developing States, particularly the smaller and the more remote and dispersed ones. The inherent handicaps of small island developing States, such as small population, lack of technological sophistication and narrow resource base, pose significant obstacles for competing for the foreign direct investment necessary to avail themselves of opportunities offered by the globalization process. Globalization is based on opportunities for cost reduction and economies of scale, which small island developing States cannot offer. In some small island developing States, poor infrastructure, the brain drain and the absence of legislative frameworks conducive to foreign direct investment add to the handicaps. While in the long run small island developing States will benefit from a stronger and more integrated global economy, in the short and medium term they need support to enhance the viability of their export sector through appropriate restructuring and diversification.

28. The Programme of Action stresses the importance for small island developing States to achieve sustained economic growth and sustainable development through enhanced capacities to exploit new trading opportunities in the context of trade liberalization. This implies efforts towards greater competitiveness of current export products and, as necessary, diversification into new areas of tradeable goods and services, particularly those that are less vulnerable to external shocks. For many small island developing States it also implies

the need for change in the direction of trade to reduce the economic disadvantages of remoteness. In the short and medium terms, however, for many small island developing States trade liberalization will result in the erosion of vital market access preferences for such agricultural products as bananas and sugar and for textiles sold to the European Union. During this transition period small island developing States need support to carry out the necessary diversification into alternative goods and services exports.

29. A critical requirement for the effective implementation of several areas of the Programme of Action is environmentally sound technologies. No meaningful progress can be made in areas such as waste management, natural disaster preparedness, sustainable management of marine resources, renewable energy, and telecommunications without the necessary technologies. In these and other areas, there is a need for concerted efforts at the international level to provide small island developing States with access to technology on affordable terms, and to assist them in their efforts at establishing regional centres for capacity-building including training in the assessment of technologies as well as their management, technology negotiations and partnerships leading to technology transfer, and adaptation of available technology to local conditions.

30. A profound concern among small island developing States is about the impact of climate change and sea level rise. To the extent that climate change is the result of anthropogenic activities, small island developing States are committed to doing their best to reduce greenhouse gas emissions, although their contribution to the problem is negligible. Their main problem is how to adapt to the impacts of climate change and climate variability on climatic and weather patterns and to sea level rise. As witnessed in recent years by a number of small island developing States, particularly in the Pacific, climate change and climate variability can have devastating effects on their economies. Since high proportions of island settlements are located on the coast, as are also major industries, including tourism, encroachment of the sea on land due to sea level rise will have devastating consequences for many small island developing States. To ensure the sustainable development of small island developing States and even the survival of some, concerted action at the international level to reverse the trend of climate change needs to be supplemented by adequate measures to enable those States to successfully adapt to climate change, climate variability and sea level rise.

31. The aim of the Small Island Developing States Network (SIDSNET) is to link island stakeholders to the rest of the world including islands globally through the Internet so that they may have easy access to information. Since the Barbados Conference, all small island developing States except Niue and Tuvalu have established connectivity with the Internet. Through UNDP, a SIDSNET Web site at www.sidsnet.org has been created, which enables communication among small island developing States. By June 1999, UNDP plans to complete workshops in 30 island States on training in the use of the SIDSNET Web site to share information with other small island developing States. At present, at the national level, access to the Internet and therefore also to SIDSNET is limited to governmental institutions and the larger private organizations. In most small island developing States, access by stakeholders is constrained by a number of major obstacles, including poor telecommunications infrastructure, high cost of computers, high cost of dial-up and leased lines to the Internet, restrictive telecommunications policies and inadequacy of trained personnel. As long as these obstacles remain, small island developing States will not be able to take full advantage of the many potential benefits of SIDSNET, such as distance learning and information on environmentally sound technologies and practices, tele-health, trade and tourism.

32. The objective of the Small Island Developing States Technical Assistance Programme (SIDSTAP) is to facilitate the exchange of experience and knowledge among small island developing States and between those States and other countries for enhancing the quality and broadening the choice of sustainable development expertise of small island developing States. The Programme was launched by UNDP in 1995, following the completion of a feasibility study. The major initiatives under SIDSTAP thus far include studies on the assessments of the needs of African and Caribbean small island developing States and the formulation of a compendium of project proposals for Caribbean small island developing States to address those needs; compilation, publication and circulation of a directory of small island developing States institutions and experts; a training programme in collaboration with the Government of Singapore for the Caribbean small island developing States in selected programme areas; and a training programme in collaboration with the International Labour Organization (ILO) for the enhancement of the human resource capacity of selected regional institutions of small island developing States. In view of its potential for contributing effectively to the development of human resources and institutional capacity for the implementation of the Programme of Action, SIDSTAP deserves continued external support.

C. Sectoral and cross-sectoral priorities

33. In the view of small island developing States, all the thematic programme areas of the Programme of Action are priority areas of equal importance calling for immediate attention. The Barbados Conference identified nine sectoral priority areas, which are contained in chapters I–IX of the Programme of Action, and five cross-sectoral areas, excluding trade and finance which it included under means of implementation. The cross-sectoral areas are seen as indispensable development prerequisites in as much as they deal with the building of human resource, institutional and infrastructural capacity, which is absolutely necessary to carry out sectoral implementation. After considerable deliberations at the national and regional levels, the Caribbean and the Indian Ocean, Mediterranean and Atlantic Ocean small island developing States have recently ranked the programme areas in order of priority at the regional level, while maintaining that they are all priorities in the sense that the objectives of sustainable development cannot be achieved except through a holistic and integrated approach that enables all major linkages to be taken into account, such as Integrated Coastal Area Management (ICAM) or the more comprehensive Island Management System (IMS), which aims not for environmental protection per se but for the integration of all economic, social and environmental dimensions in development planning and practice. The Pacific small island developing States have also drawn up a list of regional priorities but have not ranked the programme areas in any order of priority. The priorities as identified by small island developing States in these regions are contained in annex II to the present report. These priorities, however, do not necessarily correspond fully to the national priorities of individual small island developing States.

34. The adoption of an integrated approach to development so as to give due attention to all the programme areas, however, does not preclude the need to establish priorities within individual programme areas. The programme areas are broad, each calling for a host of actions not all of which, on account of resource constraints, can be taken simultaneously. Thus, there is a compelling necessity on the part of small island developing States to identify the strategic issues to be dealt with in each programme area. Intra-sectoral priorities will evidently differ from country to country depending on each country's specific immediate problems and needs. It is, consequently, not possible to arrive at anything like a list of common priorities of all small island developing States in all programme areas.

35. Looking to the future, it is important to keep in mind that the implementation of major measures takes considerable time and even if resources were available major goals could be attained only over the long term. What is important, therefore, is not to aim for rapid results, but for consistency in implementation so as to maintain the momentum. This will require that the Programme of Action be firmly placed on the political agenda at the national, regional and international levels and be fully recognized by Governments and civil society in all small island developing States and the international community as the framework for sustainable development activities in small island developing States.

D. Suggestions for the work programme of the Commission on Sustainable Development for the period 2000–2004

36. The Commission may wish to adopt the work programme set out in the table below for its next review cycle, 2000–2004.

Suggested work programme of the Commission on Sustainable Development for the period 2000–2004

Programme of action themes		
Sectoral themes	*Cross-sectoral themes*	*Economic sectors other than tourism*
	2000	
1. Land resources, including terrestrial biodiversity	1. Regional institutions and technical cooperation	Agriculture and forestry
2. Natural disasters	2. Vulnerability	
	2001	
Climate change and sea level rise	1. Human resources	1. Energy
	2. National institutions and administrative capacity: (a) National institutions (b) Training	2. Industry, including services other than tourism
	2002	
1. Freshwater	Transport and communications: (a) Air transport (b) Maritime transport (c) Telecommunications	Trade and tourism
2. Management of waste		
	2003	
Coastal and marine resources, including marine biodiversity	1. Science and technology: (a) Science (b) Technology transfer	Fisheries: nearshore and offshore
	2. Finance (update of external capital flows to small island developing States annually; analysis of trends in 2003)	
	2004	
Comprehensive review	Comprehensive review	Comprehensive review

Notes

[1] *Report of the Global Conference on the Sustainable Development of Small Island Developing States, Bridgetown, Barbados, 25 April–6 May 1994* (United Nations publication, Sales No. E.94.I.18), chap. I, resolution 1, annex II.

Annex I

Selected illustrative examples of significant initiatives by small island developing States at the national, regional and international levels

A. National level

- **Climate change and sea level rise**. Niue has established a number of mechanisms to deal with climate change and sea level rise, which include a Greenhouse Inventory Group, a Vulnerability Impact and Assessment Group, a Capacity-building Group, and a Mitigation and Options Group. Fiji, the Marshall Islands, Mauritius and the Federated States of Micronesia are undertaking studies of greenhouse gas sources and sinks.
- **Waste management**. The Bahamas, Dominica, Saint Kitts and Nevis and Seychelles have developed new regulations to strengthen the regulatory framework for waste management. Barbados has commissioned a technical Working Group on the management of hazardous wastes, and has also developed a programme of action for the disposal of hazardous wastes. Papua New Guinea is developing a pollutant release and transfer register. Mauritius and Seychelles have been developing sanitary landfills.
- **Coastal and marine resources**. Barbados has established a Coastal Conservation Unit and has produced a draft coastal zone management act. Bahrain, Cape Verde, Fiji and Kiribati have developed plans for integrated coastal zone management.
- **Freshwater resources**. Bahrain has established a committee for the protection of freshwater resources. An action plan has been prepared and the water distribution network is being modernized.
- **Land resources**. Fiji has adopted a comprehensive Land Conservation and Improvement Act, which covers good husbandry of land. Good land husbandry practices are also an integral part of its Agricultural Landlord and Tenant Act, which governs all leasing of agricultural land.
- **Tourism resources**. Mauritius has reformed legislation and drawn up a master tourism plan to ensure the sustainability of its tourism resources and has established a Ministry of the Environment and Quality of Life. Maldives has enacted an Environmental Protection and Conservation Act, strengthened regulations on tourism development, carried out environmental impact studies and put in place measures for the protection of coral reefs and coastal systems.
- **Biodiversity resources**. Antigua and Barbuda has adopted a legal framework for the protection of endangered species, and has carried out public awareness campaigns. Mauritius has set up a Wildlife and National Parks Advisory Council to oversee the management of national parks; a management plan for ecological restoration of islets is being implemented: *in situ* and *ex situ* conservation of endangered endemic plants is being pursued. Small island developing States in all regions have assigned areas for protecting biodiversity. Examples include the Coastal and Marine Biodiversity Project in Dominica and 14 conservation areas in 11 States in the South Pacific, which are either in the design or implementation stages.
- **National institutions and administrative capacity**. Barbados has established a National Commission on Sustainable Development composed of representatives of various ministries and offices, charged with advisory, coordination and advocacy functions. Similar high-level bodies have been established in the Bahamas, Bahrain, Fiji, Haiti, Jamaica, Mauritius, Sao

Tome and Principe and Singapore. Fiji has drafted new legislation to provide a comprehensive legal structure for sustainable development. A sustainable development bill is in the final stage of development. In addition, the country has completed a National Environment Strategy. In the Bahamas, specific legislation has been introduced to cover environmental and natural resources, such as Marine Mammal Legislation, the Agriculture and Fisheries Rule and the Tourism Incentive Act. Initiatives similar to those of Fiji and the Bahamas have been undertaken in Antigua and Barbuda, Bahrain, Barbados, Haiti, Jamaica, Sao Tome and Principe and Singapore among others.

- **Transport and communication**. Airport extension projects have been completed or are under way in a number of small island developing States, including passenger terminal extensions in Antigua and Barbuda, Barbados, Mauritius, the Federated States of Micronesia, Saint Kitts and Nevis, Saint Lucia and Seychelles. New passenger terminals have been built in Palau and Sao Tome and Principe. Cuba has built a new airport.

- **Human resource development**. In the Bahamas, school curricula for the primary and secondary levels have been revised to address environmental and development concerns. Schools and universities are now part of the national network addressing sustainable development issues. In Jamaica, environment and sustainable development issues have been integrated into the curriculum for grades 1–9. At the primary level, grades 1–3 devote 14 per cent of total social studies time to the environment; grades 4–6 use 14 per cent of the social studies time for exploring the environment. At the secondary level, 14 per cent of the science subject time of grades 7–9 is devoted to the environmental studies.

B. Regional level

- **Climate change and sea level rise**. The South Pacific Regional Environment Programme (SPREP) is developing a programme to enable countries to collect, analyse and interpret meteorological data. As part of the South Pacific Sea-level Rise Monitoring Project, gauges for monitoring sea level have been established in 11 countries in the South Pacific region. In the Caribbean, the tide gauge monitoring network for the Global Oceanic Observation System (GOOS) has been strengthened. In the Caribbean region, 12 countries are participating in the Caribbean Planning for Adaption to Global Climate Change Project, which is the most significant regional initiative in this programme area to date.

- **Waste management**. Pacific small island developing States have adopted the Waigani Convention with the objective of banning the importation of hazardous and radioactive wastes and managing hazardous waste within the region as a whole. In the Caribbean region, Governments of small island developing States are implementing the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities and the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention), through the development of a Protocol to Control Land-based Pollution of the Wider Caribbean Region.

- **Coastal and marine resources**. The Forum Fisheries Agency of the South Pacific region has provided technical support to small island developing States for negotiation of the South Pacific Tuna Treaty with the United States of America. The Indian Ocean Commission and SPREP have developed guidelines for monitoring coral reefs in their respective regions. In the South Pacific, 13 small island developing States have embarked on the development and implementation of the Strategic Action Programme aimed at managing the coastal and ocean resources in the South Pacific in a sustainable manner. In the Indian Ocean, a Regional

Oil Spill Contingency Planning Project is proposed to protect the marine ecosystems of the western Indian Ocean.

- **Tourism resources**. In the Caribbean region, the Organization of Eastern Caribbean States (OECS) created a Technical Committee on Sustainable Tourism in 1998. A strategy and plan of action for the development of sustainable tourism in the Caribbean has been adopted. Efforts have been made to ensure compliance with the International Convention for the Prevention of Pollution from Ships (MARPOL Convention).

- **National institutions and administrative capacity**. The Caribbean Center for Development Administration, as implementing agency of a UNDP/Caribbean Development Bank pilot project, Strengthening Capacity for Sustainable Development in the English-speaking Caribbean, has established sustainable development councils in six countries in the region as a major initiative on the strengthening of institutions and capacity-building.

- **Regional institutions and technical cooperation**. Small island developing States in the Pacific region have developed a well organized structure of eight regional intergovernmental organizations, each with a particular focus funded by member contributions. In order to avoid duplication and harmonize their activities, these eight organizations have established the South Pacific Organizations Coordinating Committee (SPOCC), a key function of which is to coordinate regional programmes. In the Caribbean, ECLAC/CDCC, in collaboration with CARICOM, has served as the regional coordination mechanism *ad interim* for the implementation of the Programme of Action. In the African region, the Indian Ocean Commission has also been actively engaged in the implementation process.

- **Transport and communication**. The Pacific Islands Telecommunications Association (PITA) was formed in 1997 and established close working relationships with the International Telecommunication Union. Other regional private sector initiatives include The South Pacific Ports Association (SPPA) and the Association of South Pacific Airlines (ASPA).

C. International level

- **Climate change and sea level rise**. Under the coordination of regional organizations, small island developing States have actively participated in several international monitoring programmes, such as the Global Ocean Observation System (GOOS), the Global Climate Observation System (GCOS) and the Global Sea-level Observation System (GLOSS). As of 7 October 1998, 35 small island developing States had ratified the United Nations Framework Convention on Climate Change. As of 11 December 1998, 14 had signed or ratified the Kyoto Protocol. As of 10 December 1998, 30 small island developing States had ratified the Vienna Convention for the Protection of the Ozone Layer, 30 had ratified the Montreal Protocol on Substances that Deplete the Ozone Layer, 21 had ratified the London Amendment to the Montreal Protocol and 10 had ratified the Copenhagen Amendment to the Montreal Protocol.

- **Management of wastes**. As of 17 June 1998, 17 small island developing States had ratified the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal. As of 30 October 1998, 18 small island developing States had ratified the International Convention for the Prevention of Pollution from Ships, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78). In addition, small island developing States in all regions have begun the implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities through national and regional projects.

- **Coastal and marine resources**. As of 3 November 1998, 37 small island developing States had ratified the United Nations Convention on the Law of the Sea. As of 5 January 1999, 11 small island developing States had ratified or acceded to the Agreement for the Implementation of the Provisions of the Convention relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks; another 5 had signed the Agreement.
- **Land resources**. As of 9 December 1998, 27 small island developing States had ratified or acceded to the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa.
- **Biodiversity resources**. As of 28 May 1998, 38 small island developing States, that is, all small island developing States on the United Nations list with the sovereign capacity to enter into international legal instruments, had ratified the Convention on Biological Diversity. As of 6 November 1998, 19 small island developing States had ratified the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).
- **Human resource development**. A number of small island developing States in the Pacific (Cook Islands, Fiji, Papua New Guinea, Samoa and Vanuatu) have ratified the Convention on the Elimination of All Forms of Discrimination against Women.

Annex II

Priorities for future action identified by small island developing States at the regional level

Caribbean	*Indian Ocean, Mediterranean and Atlantic Ocean*[a]	*Pacific*[b]
	Sectoral priorities	
1. Coastal and marine resources	1. Tourism resources	• Improving management of inshore and offshore marine resources
2. Natural and environmental disasters	2. Biodiversity resources	• Minimizing land- and sea-based pollution
3. Land resources	3. Climate change and sea level rise	• Promoting sustainable tourism
4. Management of waste	4. Coastal and marine resources	• Freshwater resources: provision of adequate supplies of non-polluted freshwater
5. Climate change	5. Freshwater resources	
6. Freshwater resources	6. Management of waste	• Conservation of terrestrial and marine biological resources
7. Tourism resources	7. Natural and environmental disasters	• Developing environmentally and economically sustainable energy resources
8. Biodiversity	8. Land resources: development of sustainable and diversified agricultural production	
9. Energy resources	9. Energy resources	
	Cross-sectoral priorities	
1. Implementation, monitoring and review • Financial resources • Legislation • Information management • Involvement of marginal group	1. Human resource development • Health • Education • Training • Gender mainstreaming • Poverty eradication	• Improving United Nations coordination • Building new partnerships and promoting participation • Implementing multilateral agreements
2. National institutions and administrative capacity • Capacity-building • Policy formulation • Training	2. Globalization, development finance, trade and investment	• Building capacity through education, training and awareness-raising • Strengthening links between environment and integrated development
3. Human resource development • Poverty alleviation	3. Transport and communication	• Developing benchmarks and information for sustainable development
4. Science and technology • Technical resources	4. Science and technology	• Integrating health, population and development
5. Transport and communications	5. Regional cooperation and integration Regional institutions and technical cooperation	• Vulnerability index • Financial resources
6. Regional institutions and technical cooperation	6. Implementation, monitoring and review	

[a] At the Ministerial Meeting of African Small Island Developing States (Seychelles, 7–10 July 1998), priorities were identified and ranked, but not by sectoral and cross-sectoral categories. At the Indian Ocean, Mediterranean and Atlantic Small Island Developing States Ministerial Meeting (Valetta, Malta, 24–27 November 1998), the priorities identified at the African small island developing States meeting were reaffirmed. In the table they have been grouped under sectoral and cross-sectoral categories. The Malta meeting also identified the following common immediate priorities: oceans/seas; tourism; waste management; freshwater resources; biodiversity; trade; financing; limitations to human resources and capacity; institutional weaknesses; infrastructural development; integrated management approaches; vulnerability index; and improving United Nations coordination.

[b] At the Roundtable of Pacific Ministers on Sustainable Development (Auckland, New Zealand, 17 December 1998), Pacific small island developing States outlined their priorities for future action but did not rank them. They are presented here as such.

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Report of the Secretary-General

Addendum

Climate change and sea level rise*

Contents

		Paragraphs	Page
I.	Introduction	1–2	3
II.	Problems	3–4	3
III.	Progress achieved	5–14	4
	A. Implementation of the United Nations Framework Convention on Climate Change	5–6	4
	B. Monitoring and collection of data and exchange of information	7–8	4
	C. Assessment of vulnerability and adaptation to climate change	9–10	4
	D. Improved scientific understanding of climate change and the impacts of sea level rise	11–13	5

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99-01224 (E) 020299

	E.	Funding from the Global Environment Facility	14	5
IV.	Constraints		15	6
V.	Priorities for future action		16–19	7
	A.	National level	16	7
	B.	Regional level	17	7
	C.	International level	18	8
	D.	Implementation of the IPCC framework	19	9

I. Introduction

1. In 1995, the Intergovernmental Panel on Climate Change (IPCC) concluded that global mean surface air temperature has increased by about 0.3–0.6 °C since the late nineteenth century. Small island developing States are especially vulnerable to climate change and concomitant sea level rise because their populations, agricultural land and infrastructure tend to be concentrated in the coastal zones. Their vulnerability has increased over time due to anthropogenic activities. Studies suggest that overexploitation of the natural resources of small island developing States has led to a loss in their resilience to cope with sea level rise.

2. There are no accurate estimates of the mitigation costs of protecting small island developing States against climate change per se. However, IPCC estimates that adaptations to climate change could total about 0.43 per cent of the gross domestic product of most developing countries. For the Caribbean small island developing States, for example, IPCC estimated that the costs of new construction alone for protection against sea level rise would amount to US$ 1.1 billion (1990).

II. Problems

Inundation of coastal settlements

3. Sea level rise will inundate many low-lying coastal areas. This is of serious concern to small island developing States given that most of their populations live in coastal areas, either because the islands are very small or because the steep areas of larger islands are not suitable for habitation. Both situations result in a high population density along the coastline, thereby increasing the vulnerability of the population to sea level rise. The inundation of coastal areas can result in: (a) loss of agricultural land, a common concern because agriculture is still the primary source of income in many small island developing States, and most agricultural land lies along the coastline, increasing its vulnerability to sea level rise; (b) loss of exclusive economic zone (EEZ), a common concern because sea level rise will also reduce the exclusive economic zone, thereby reducing the resource base. The inundation of coastal areas will result in salt water intrusion. Since many small island developing States rely on groundwater, this will have a negative impact on water-related development activities, as well as on the sustainability of the agricultural sector.

Tourism

4. Hospitable weather and excellent sun, sand and sea linkages enhance small island developing States as desirable tourist destinations. If this ambience is lost because of climate change and loss of beaches from sea level rise, the negative impact on the tourism industry will be significant. Many small island developing States will suffer massive losses of both revenue and employment opportunities.

III. Progress achieved

A. Implementation of the United Nations Framework Convention on Climate Change

5. Most island countries have ratified the United Nations Framework Convention on Climate Change and are acting to ensure compliance through a coordinated series of projects. Some countries, such as Fiji, Mauritius, the Marshall Islands and the Federated States of Micronesia are already undertaking studies of greenhouse gas sources and sinks. Comprehensive and coordinated support to all Pacific island Parties to the Convention is provided under the Global Environment Facility (GEF)-funded Pacific islands climate change assistance project, which is meant to assist countries in meeting their national reporting obligations under the Convention. United Nations agencies are also assisting small island developing States in preparing their national communications for the Convention. Enabling activities for climate change have been carried out for Maldives, Niue and Mauritius. Proposals for similar enabling activities in Cuba, Haiti, Comoros and the Dominican Republic are also in the preparation stage.

6. Article 12 of the Kyoto Protocol to the Convention adopted in 1997 contains the clean development mechanism. This mechanism has the goal of (a) assisting Parties not listed under annex I (which include small island developing States) to contribute to the ultimate objectives of the Convention and to help achieve sustainable development; and (b) assisting Parties listed under annex I to achieve compliance with their quantified emission limitation and reduction commitments.

B. Monitoring and collection of data and exchange of information

7. Many small island developing States have some operational climate data-collection systems. The South Pacific Regional Environment Programme (SPREP), for example, is developing a programme to enable countries to collect, analyse and interpret meteorological data. As part of a South Pacific sea level rise monitoring project funded by Australia, gauges for monitoring sea level have been established in 11 countries in the South Pacific region. In the Caribbean region, the tide gauge monitoring network for the Global Oceanic Observation System (GOOS) has been strengthened. Maldives has also indicated an interest in participating in GOOS.

8. Under the coordination of SPREP, Pacific Island countries are participating in and contributing to international programmes, including (a) the Pacific El Niño and Southern Oscillation Centre; (b) an atmospheric radiation measurement project; (c) a South Pacific sea level rise monitoring project. A network of climate change focal points has been established in the Pacific region, and SPREP continues to coordinate climate change activities.

C. Assessment of vulnerability and adaptation to climate change

9. Studies for assessing the locations where sea level rise impacts are likely to be greatest, based on geographical, physical, social and economic indicators, have been carried out in 12 Pacific Island countries and some countries in the Caribbean. In addition, studies of

vulnerability to erosion have been conducted in Fiji and Kiribati. In-country seminars on coastal monitoring have been conducted in Tuvalu, Kiribati and Samoa.

10. The Caribbean project entitled "Caribbean: planning for adaptation to climate change" is a direct outcome of the Programme of Action for the Sustainable Development of Small Island Developing States. This regional project is meant to assist countries in coping with the adverse effects of climate change. The project deals specifically with the potential impacts of sea level rise on coastal and marine areas through vulnerability assessments. It also contains provisions for capacity-building linked to adaptation planning.

D. Improved scientific understanding of climate change and the impacts of sea level rise

11. Our understanding of climate change and sea level rise is increasing aided by climate models, which are increasingly being used as tools both to understand climate change and to make future projections. Within the limits of current scientific knowledge and the capacity of current computers, the models attempt to simulate the complex physics and dynamics of the earth-atmosphere-ocean-land-ice systems. Many of these models now include sea level as one of the relevant variables.

12. IPCC has analysed adaptation and mitigation strategies. It has also provided an extensive analysis of the economic and social ramifications of climate change. Notwithstanding major uncertainties, there appears to be sufficient information to provide a credible basis for action now. A number of monitoring programmes, such as GOOS, the Global Climate Observation System (GCOS) and the Global Sea-Level Observation System (GLOSS) are directed towards identifying signs of climate change, and to addressing the gaps in our understanding of the physics of atmosphere-land-ocean-ice interactions.

13. The World Climate Research Programme is carrying out major research projects on what changes are occurring in the ocean and how they are occurring. The United Nations Environment Programme (UNEP) has established a working group on the El Niño Southern Oscillation (ENSO) to examine the potential of using ENSO forecasts in early warning systems for famine, and how that information could be utilized to prepare for the adverse impacts of climate variability. It is also examining the implications of climate change on the frequency, intensity and impacts of ENSO-related events on socio-economic systems. A joint working group on climate change detection and attribution has been established by the World Climate Research Programme and the World Meteorological Organization Commission for Climatology. Its task is to provide a firm scientific base for making assessments on the current rate of global climate change and its manifestations at the regional level.

E. Funding from the Global Environment Facility

14. The Global Environment Facility (GEF) has provided funding to small island developing States for various enabling activities, including one regional project entitled "Regional planning for adaptation to climate change", which is meant to assist countries in preparing to cope with the adverse effects of climate change, particularly sea level rise. GEF has also granted funds for enabling activities in small island developing States, totalling US$ 12.42 million as of December 1997. It has also provided funding to small island developing States in the area of environmentally sound energy development, at a cost of

US$ 7.1 million. That sum has subsequently leveraged more than US$ 60 million for the same purpose. Some small island developing States also benefit through participation in a number of global projects on enabling activities.

Case study: Niue

Niue is a small island in the South Pacific, about 65 kilometres in circumference, with a population of 2,000. The traditional belief in Niue was that climate was the creation of God, not to be disturbed, and that any changes that occurred were His way of doing things. However, there has been a noticeable change in perspective following a national climate change awareness workshop in 1998, attended by 70 local participants. The participants were divided into six groups (see below) and were given specific tasks in the preparation of the country's first communication on this topic. The groups comprised local experts, and were provided with resources to hire external consultants should the need arise.

The greenhouse inventory group has estimated the carbon dioxide emissions from fossil burning fuels to be 4,931.003605 gigagrams. The education training and awareness group has facilitated public awareness through village meetings and school programmes. The capacity-building group is developing a national action plan for human resources development, while the mitigation and options group is examining approaches suitable to the country's situation. The environment group has found that the soil is vulnerable to prolonged dry periods, while the vulnerability impact and assessment group is working to address its responsibilities. The Government of Niue has also developed a national environment strategic management plan, highlighting the vulnerability of the country to climate change.[1]

IV. Constraints

15. During the implementation of activities in the area of climate change and sea level rise, implementing agencies faced various constraints. Though these differ from region to region, the common ones are financial information and manpower constraints: the establishment and/or operation of national and regional institutions in small island developing States are highly dependent on external funding. This financial dependence limits the ability of regional institutions to guarantee this function over the longer term. Anticipated new finances are also not forthcoming in many cases. At the national level, the sources of information on small island developing States sea level rise are dispersed. Furthermore, different institutions are using different methods to assess sea level rise. In most small island developing States, there is no centralized information on what organization has what information, which makes it difficult to access the available information. There is often a lack of both personnel and institutional capacity to monitor climate change at either the national or regional levels.

V. Priorities for future action

A. National level

16. Most small island developing States national development plans do not consider the possibility of sea level rise. In view of that shortcoming, it is imperative for small island developing States to re-examine their national environmental, conservation and development plans and to make adjustments, as necessary, to consider that possibility. Development priorities for national actions include the following:

(a) Policies, plans and regulatory frameworks for land use must be re-examined to consider the possible impacts of sea level rise;

(b) Many small island developing States must also review their criteria for land use planning, as well as their long-term investment decisions, in order to develop new regulations which take into account climate change and sea level rise in conjunction. In order to enhance possibilities for agreed action, such criteria should be developed by professionals in consultation with the communities affected;

(c) Vulnerable areas must be identified based on detailed survey data and plausible global assumptions about sea level rise;

(d) National coastal zone management policy must be developed to take the possibility of sea level rise into account. Such policy is likely to point to new options for dealing with future threats;

(e) Areas that are vulnerable to sea level rise must be accurately mapped and used in physical planning exercises;

(f) Alternative freshwater sources to groundwater (e.g., rainwater harvesting, recycling and reuse of water) must also be developed.

B. Regional level

17. Priorities for regional action include the following:

(a) Information on climate change and sea level rise must be created based on the surveys, and regional information management programmes must be established. Such programmes should consider such issues as data collection and analysis, dissemination of information for decision makers at all levels, and utilization of new information technologies, as appropriate. They should include inputs from multidisciplinary teams at the national and regional levels;

(b) A regional information centre to coordinate existing databases should be established;

(c) Monitoring networks for weather, climate and sea level rise must be improved. Further sharing of relevant data should be made a priority;

(d) Additional research on climate is essential to increase understanding of climate variation and climate change and predictive capacity of their impacts on small island developing States;

(e) Studies on how vulnerable sectors are coping with current climate variability, natural disasters (e.g., cyclones), as well as studies of past and current actions to cope with their adverse impacts, are needed;

(f) Region-wide country-level research activities to increase the robustness of infrastructural design, increase the flexibility of vulnerable managed systems, enhance the adaptability of vulnerable natural systems and reverse the trends of factors that increase vulnerability should be developed and implemented;

(g) The scientific and technical capacity of small island developing States to develop and implement effective strategies and policies to minimize or mitigate the impacts of climate change and sea level rise must be developed and/or strengthened.

C. International level

18. Priorities at the international level include:

(a) Improvement of knowledge and understanding of climate change and sea level rise. Needed actions include:

(i) Facilitating research on the regional and temporal responses to sea level rise which considers changes in the frequency, intensity and location of higher-frequency and smaller-scale phenomena;

(ii) Facilitating establishment of an observation system for generating data sets to improve model predictions of climate change and for predicting direct future impacts on small island developing States. Such a system could include high-accuracy altimeters to measure spatial variations and monitor temporal variability and trends in sea level rise; sufficient open-ocean gauges (about 30) to allow researchers to eliminate trends in the altimeter, a globally distributed set of gauges for sampling at the margin of the areas monitored by the altimeter (including coastal regions and high latitudes), geodetic positioning to improve the reference levels of *in situ* gauges and improvements in the World Weather Watch Network to address small island developing States meteorological data gaps;

(b) Adaptation to climate change. Needed actions include:

(i) Assisting small island developing States in planning for adaptations to climate change, including support for regional organizations to train staff in such skills as mapping areas vulnerable to sea level rise;

(ii) Assisting small island developing States in carrying out specific in-country research in the four categories of anticipatory adaptation presented in the report of the GEF Science and Technology Panel entitled "Planning for adaptation to climate change", namely, increasing the robustness of infrastructural design and long-term investments; increasing the flexibility of vulnerable managed systems; enhancing the adaptability of vulnerable natural systems; and revising trends that increase vulnerability;

(c) Providing increased financial and technical assistance to small island developing States for building human resource and institutional capacity at the national and regional levels;

(d) Supplementing the resources of the relevant regional small island developing States institutions responsible for implementing projects on adaptation to climate change and sea level rise.

D. Implementation of the IPCC framework

19. Actions are needed in the following areas:

(a) Provision of technical assistance and technology, assisting small island developing States to prepare reports on their greenhouse gas emissions to meet their national reporting obligations, and a popularized version of the Kyoto Protocol, highlighting the clean development mechanism;

(b) Assisting in the transfer of appropriate technology to reduce greenhouse gas emissions;

(c) Resource mobilization: assisting small island developing States in obtaining funds from GEF and other donors to implement the Convention and the Kyoto Protocol, in particular to implement necessary measures to adapt to climate change;

(d) Monitoring and assessment: improving the monitoring network for weather, climate and sea level rise, promoting exchange of relevant data, strengthening the ability of small island developing States to participate in the global monitoring systems (e.g., GOOS, GCOS) and strengthening the monitoring and assessment capacity of small island developing States.

Notes

[1] See T. D. Coe, "Small is dutiful", *Our Planet*, vol. 9 No. 6 (1998).

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Addendum

Waste management in small island developing States*

Contents

		Paragraphs	Page
I.	Introduction	1	2
II.	Problems	2	2
III.	Progress made in dealing with waste management problems	3–12	2
IV.	Constraints	13	5
V.	Priorities for future action	14–17	6
	A. National level	14	6
	B. Regional level	15	6
	C. International level	16–17	7

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I. Introduction

1. The unique social, economic and environmental characteristics of small island developing States, such as high population density, relative isolation, limited availability of land space, and paucity of human and financial resources, limit the range of possible options for the sound management of waste. Waste management is a serious environmental problem for small island developing States, more significant than for many other countries. It is not limited to the disposal of litter. Sewage, hazardous and toxic wastes also form part of the waste problem. The large amounts of wastes produced by tourists, for example, is a difficult problem for small island developing States, particularly since they are typically generated over a short period, thereby often overloading existing disposal and treatment facilities. Protection of the environment from pollution is extremely important for small island developing States since apart from other reasons that are common to all countries, two important industries — tourism and fisheries — depend on a pristine environment.

II. Problems

2. The major problems in waste management in small island developing States are:

(a) Pollution of groundwater, surface and marine pollution from land-based sources, such as domestic sewage, industrial effluents and agricultural run-off. They carry risks for human health, and can degrade habitats, such as coral reefs, and tourist attractions, such as beaches. Many small island developing States receive bad publicity related to disease outbreaks and the destruction of fisheries, which can have major adverse economic impacts;

(b) The management of toxic substances, such as pesticides, waste oil and heavy metals. Most small island developing States do not have the systems or physical capacity to isolate and dispose of such substances;

(c) Sewage treatment facilities. In many small island developing States, such facilities are inadequate, either because they are overloaded or because of a shortage of trained manpower. As a result, poorly treated effluent is often discharged into the environment;

(d) Ineffective regulations. Some small island developing States have spent a considerable amount of time and financial resources in developing regulations. However, regulations have not been very effective in many cases because of inadequate institutional and human resource capacities to enforce them;

(e) Lack of waste disposal sites. Gullies and the marine environment are still used as disposal sites by some small island developing States because of the shortage of land and inadequate capacity to collect garbage. The inability to manage solid waste disposal facilities is a common problem for small island developing States, and disposal sites can easily become a focus of disease transmission;

(f) Lack of facilities for storage and disposal of hazardous wastes.

III. Progress made in dealing with waste management problems

3. Significant progress had been made in waste management in a number of small island developing States. Most of the successful initiatives preceded the adoption of the Programme of Action for the Sustainable Development of Small Island Developing States, which served

to draw the attention of the international community to waste management problems and other significant issues of small island developing States. Most activities initiated subsequent to the Programme of Action are still in an early stage of implementation, even though attention to the sustainable management of waste has increased in both the public and private sectors.

4. The private sector has become actively involved in recycling biodegradable and non-biodegradable materials in some small island developing States. Materials being recycled are paper, plastics, can metals and used oil. Economic incentives to reduce particular wastes, such as a deposit refund system for cans and bottles, are in use in virtually all regions.

5. Regulation of waste management takes the form of different laws and ordinances administered by various government sectors. Several small island developing States, such as the Bahamas, Saint Kitts and Nevis, Seychelles and Dominica, have initiated regulations specifically directed to waste management. Many have developed further strategic plans for the sustainable management of solid and liquid wastes in specific areas.

6. In the Pacific region, the South Pacific Regional Environment Programme (SPREP) is assessing the abilities of eight island States to manage chemicals. Papua New Guinea is developing a pollutant release and transfer register, while the Marshall Islands has been assisted in removing and disposing of contaminated oil. Barbados commissioned a technical working group on the management of hazardous wastes, and has developed a programme of action for sustainably disposing of hazardous wastes. Several countries have been able to secure external donor support for improving their hazardous waste management infrastructure, including through the development of legal and regulatory frameworks.

7. Sanitary landfills have been developed in Seychelles and Mauritius, and are under development in various Caribbean island States. In the South Pacific region, some small island developing States are improving their existing landfills. Several countries, such as Barbados, Belize, Jamaica, Trinidad and Tobago, and Maldives, have secured donor support for upgrading waste management infrastructure. These efforts include the upgrading of waste and sewerage systems to serve small towns, the rehabilitation and maintenance of sewerage systems, and institutional strengthening.

8. Some small island developing States in the South Pacific region have found the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal inadequate, in that it does not prohibit the movement of hazardous wastes from the North to the South. They have, therefore, adopted the Waigani Convention, with the goal of (a) banning the importation of hazardous and radioactive wastes; (b) controlling the transboundary movement of hazardous wastes; and (c) managing hazardous wastes throughout the region.

9. Through regional institutions, such as SPREP and Indian Ocean Commission, programmes for minimizing wastes and pollution control have been prepared and implemented in a number of small island developing States. The programmes are designed to develop and implement strategies for the prevention and control of pollution of land and coastal and marine resources. Several training workshops have also been conducted within the framework of those regional organizations. The Caribbean small island developing States are addressing the management of ship and shore-generated wastes through an Organization of Eastern Caribbean States (OECS)/World Bank waste management project.

10. Though many small island developing States have yet to ratify the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) or the Basel Convention, some small island developing States have nevertheless received assistance to prevent pollution under those Conventions. For example, the International Maritime

Organization (IMO) and the Global Environment Facility (GEF) are assisting 22 countries in the Caribbean to address the legal and technical obstacles preventing the efficient implementation of MARPOL 73/78, as well as to facilitate the special area statutes for the wider Caribbean area under annex V of MARPOL 73/78. Components of this programme include the assessment of existing waste management systems, the development of criteria for port waste reception facilities, the development of integrated waste management alternatives and public awareness activities.

A case study in brief: regional oil spill contingency planning project for the Indian Ocean small island developing States

The objective of this proposed project is to protect the environmental integrity of the coastal and marine ecosystems of a large, biologically rich and relatively pristine part of the western Indian Ocean. The project will address this objective by helping the Comoros, Mauritius and Seychelles, as well as Madagascar, to ratify and comply with the International Convention on Oil Pollution Preparedness, Response and Cooperation, which requires States to develop and maintain adequate capacity to respond to oil pollution emergencies. These countries will be assisted in ratifying the International Convention on Civil Liability for Oil Pollution Damage 1992 and the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage. They will be provided with the necessary legal technical assistance for ratification and subsequent formulation of national legislation.

Specific objectives of the project are to establish appropriate legal and institutional frameworks to ensure compliance with relevant international conventions; develop national and regional contingency planning processes; set up appropriate national and regional oil spill response capacity; and establish sustainable financial and institutional agreements, and generate synergy through regional cooperation arrangements. These objectives will be addressed by building public awareness and preparedness at the national level and by establishing and organizing oil spill response capacity at the national and regional levels. The project complements the institutional framework provided by the Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Areas of the Eastern African Region.

The global objectives of the project are to limit the contamination of international waters and to conserve globally significant marine and coastal biodiversity by addressing the threat of oil spills in the West Indian Ocean region; involving the private sector in utilizing technological advances to resolve transboundary concerns associated with such threats; and developing a financing mechanism to sustain the national and regional capacity which is to be created by the project to deal with oil spills.

The main sponsor of the project is GEF, which is providing US$ 3,941,000. The co-sponsors of the project are IMO, the International Petroleum Industry Environmental Conservation Association, Reunion (France) and South Africa, who will provide necessary expertise. The World Bank is implementing the project on behalf of GEF. The Indian Ocean Commission is the recipient of the grant on behalf of the beneficiary countries.

11. The Caribbean region is implementing the Global Programme of Action for the Control of Marine Pollution from Land-based Activities and the Cartagena Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, through development of a protocol to control land-based pollution of the wider Caribbean region. Small island developing States in the Indian Ocean have prepared overviews of land-based sources of pollution, as part of a transboundary diagnostic analysis of the western Indian Ocean.

12. In 1990, Mauritius initiated the preparation of an environment sensitivity map and a national contingency planning project on its own initiative, with the assistance of UNEP. The country also established a national contingency planning project team, comprising persons from the public and private sectors and non-governmental organizations. The purpose was to refine the national oil spill contingency plan. The country also prepared a Port Louis harbour oil spill contingency plan, and through its Environment Protection Act made it obligatory for oil importers to have an approved oil spill response plan. Those efforts inspired the sponsors to share this experience in the region. The beneficiary countries are bringing their own contribution, in kind, to the project, estimated to value US$ 695,000.

IV. Constraints

13. In implementing waste management measures, implementing agencies have been faced with a number of constraints. The major ones are:

(a) Many small island developing States have not ratified MARPOL 73/78 or the Basel Convention, which is hampering progress;

(b) Because of inadequate skilled manpower, implementation of waste management activities has been constrained. For example, the operation of landfill and sewage treatment works has been hampered by insufficient trained manpower. For the same reason, most solid waste dumps are not properly managed and are sources of diseases;

(c) Suitable financial planning for the entire cycle of waste management has not been well developed in most small island developing States, resulting in severely underfunded operations. This is worsened by the lack of financial autonomy; where waste management departments are self-financing, the generated revenue is often used for other purposes;

(d) Small island developing States have very limited land area, which limits their use of conventional technologies requiring large areas of land; thus, small island developing States have no option but to adopt appropriate policies to reduce the amount of waste generated, and appropriate technologies to deal with waste either at its source or before its disposal. Unfortunately, small island developing States often do not have access to technologies that would meet their needs;

(e) Most small island developing States do not have environmentally sound waste management plans. For the few that do have them, plans are not well integrated with other development concerns.

V. Priorities for future action

A. National level

14. Small island developing States need to carry out the following priority actions which have been identified in national, regional and international reports:

(a) They need to adopt an integrated waste management system, focusing on waste minimization, reuse, recycling and covering issues related to health and ecology. Such a system should be based on plans that make provisions for legal frameworks, institutional arrangements, financial strategies, technical systems and the role of the private sector, non-governmental organizations and civil society at large;

(b) There is an urgent need for small island developing States to improve their management of landfills and to ensure the proper functioning of existing sewage treatment works before embarking on new projects. Management plans should ideally encompass operational requirements with appropriate guidelines/standards, including capacity-building and regular monitoring;

(c) Small island developing States should promote the reduction of waste at its sources and the reduction of the total volume of waste requiring disposal. Waste reduction should include use of clean technologies, reuse and recycling. A public awareness campaign to promote reduction of waste at household and community levels is also fundamental;

(d) Development and introduction of a regulatory framework, including standards and guidelines for managing waste, are needed in many small island developing States. In cases where such regulations already exist, enforcement measures may need to be strengthened;

(e) Port reception facilities for ship-borne wastes is of fundamental importance for small island developing States. Such facilities should also include efficient waste disposal systems. Moreover, they should be isolated from the general public because of possible diseases or pests associated with the wastes;

(f) Small island developing States need suitable long-term storage facilities for hazardous waste, and need to identify suitable final disposal options. Public and private sector partnerships are critical for the sound management of hazardous wastes.

B. Regional level

15. The following constitute priorities for regional organizations for the next five years:

(a) Providing training on (i) the design, operation and maintenance of landfills, (ii) the design, operation and maintenance of sewage treatment works, and (iii) the reuse and recycling of waste;

(b) Development and implementation of regional action plans for implementing environmental agreements. Examples are the Global Programme of Action for the Protection of Marine Environment from Land-based Activities, the Basel Convention and regional conventions, such as the Waigani Convention;

(c) Development of regional waste management strategies for treating non-biodegradable wastes, such as plastics. Strategies may emphasize the installation of new facilities or the improvement of existing recycling plants for areas where waste can be

treated. They should include provisions for transportation of waste, use of economic instruments and training of staff;

(d) Development of regional technical guidelines on issues of common concern to small island developing States, such as waste minimization, recycling, composting, removal of unused chemicals, reuse of wastewater and upgrading disposal sites. Pilot projects should be conducted before such guidelines are widely adopted;

(e) Promotion of legal frameworks, including standards for collection, treatment, recycling, reuse, processing and final disposal of wastes;

(f) Facilitation of exchange of successful experience and information among small island developing States on a regional basis, including environmentally sound technologies, should be accorded priority importance in regional cooperation arrangements. Regional agencies should assist small island developing States with the collection and transfer of information concerning sound practices, such as the improved performance of septic systems.

C. International level

16. The international community should assist small island developing States in their efforts to:

(a) Implement the provisions of the existing international arrangements, particularly of the Global Programme of Action for the Protection of Marine Environment from Land-based Activities and MARPOL 73/78;

(b) Reduce wastes by (i) promoting the transfer of cleaner production technologies, preparing a source book on available technologies and conducting pilot studies, and (ii) assisting regional institutions in developing and promoting guidelines for the recycling and reuse of waste;

(c) Strengthen national and regional capabilities to deal with waste-related issues and capacity-building for the development of national strategies incorporating legislation, regulatory frameworks and environmentally sound technologies. Monitoring and assessment should be a focus of such support.

17. International bodies should establish or strengthen systems and networks for the dissemination of information on appropriate environmentally sound technologies, recycling and disposal technologies by improving existing information exchange systems and databases.

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Report of the Secretary-General

Addendum

Freshwater in small island developing States*

Contents

		Paragraphs	Page
I.	Introduction	1–3	3
II.	Issues facing small island developing States in sustainable management and use of freshwater resources	4–17	3
III.	Regional cooperation in sustainable management and use of freshwater resources	18–19	5
IV.	Activities of the United Nations system in support of small island developing States	20–25	5
V.	Recommendations for future action in the area of freshwater resources	26–32	6
	A. Enhancing integrated planning and management	26	6

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99-03292 (E) 250299

B.	Promoting technical cooperation among small island developing States	27	7
C.	Promoting water resources assessments	28	7
D.	Promoting policies encouraging efficient management and use of existing water resources	29	7
E.	Promotion of techniques and methodologies appropriate for small island developing States	30–31	7
F.	The island systems management approach	32	7

I. Introduction

1. Small islands have limited options when developing their freshwater resources. The relatively short length of surface water circulation in small islands limits the methods available to utilize them. Groundwater occurrences are highly dependent on regular recharge events. The geophysical settings of many small island developing States leave them vulnerable not only to extreme climatological and seismic events but more critically to periods of low recharge and adverse environmental impacts, including pollution, saline intrusion, soil erosion and mass wasting. On volcanic piles dominated by rapid baseflow recession and groundwater fracture flow, on atoll islands and on coastal aquifers with thin freshwater "lenses" floating above seawater, limits in terms of water quantity and quality can be reached very quickly in periods of low recharge.

2. The relative fragility of the hydrological cycles on small island developing States means that the evaluation, planning and development of freshwater resources has to be approached with special care within the hydro-environmental limits. The prevention of saline intrusion is a case in point: small changes in freshwater table elevations from excessive abstraction can lead to wholesale upcoming of saline water into coastal aquifers and freshwater lenses, effectively removing large sections of aquifers from the available water resource base.

3. The issue of water resources in small island developing States involves many of the same problems that face developing countries in general, including inadequate management frameworks and resources, both human and financial. However, other issues unique to small island developing States, notably their highly constrained freshwater resource base and the patterns of development on limited habitable land, pose particular challenges for freshwater resources management.

II. Issues facing small island developing States in sustainable management and use of freshwater resources

The knowledge base

4. Obtaining detailed knowledge of the freshwater resource base in many small island developing States is hampered not only by finance and technical capacity but also by the technically challenging physical settings, which make baseline research and investigation extremely difficult. Those conditions are in many ways unique to small island developing States, particularly in the case of groundwater resources. In the limestone and volcanic terrains of small island developing States, groundwater may only be available in fracture systems that are difficult to exploit and whose reliability is difficult to assess. Even conducting surface geophysical surveys and drilling is demanding, and the costs and logistics of thorough groundwater exploration and development are very high and an obstacle to development.

Hydro-meteorological uncertainties

5. The dependence on regular recharge events to maintain surface-water flows and the integrity of aquifer replenishment implies that sustainable operational management of small island developing States' freshwater resources requires constant supervision, sometimes on a daily basis, such as in times of low rainfall or in the case of freshwater lens exploitation. Although the range of meteorological variability can be expected to increase as climate changes, the imperative is not to understand climate change as such but rather to find operational methods to manage freshwater resources under conditions of increased variability and range. However, the financial and human resource constraints in many small island developing States often preclude data acquisition and progressive approaches to resource conservation and management. Indeed, routine monitoring of catchment and aquifer status is the exception rather than the rule in many small island developing States, where such capacity constraints are binding.

Limited water storage capacity

6. Despite the relatively high rainfall that most of them receive, many small island developing States often have few or no permanent streams, lakes or springs. They also have limited capacity to store water for use during the dry season. In fact, building reservoirs in small island developing States, even when land is available, is fraught with complex geotechnical and hydraulic problems. In addition, the combination of high rainfall intensities, steep topography and short river channels requires structures and spillways to accommodate flash floods, and easily erodible soils can cause rapid siltation of reservoirs, further decreasing their live storage capacity. As a result, many small island developing States depend heavily on regularly recharged groundwater resources. On atolls and in coastal aquifers, such resources often exist in the form of freshwater lenses that effectively sit on higher density saline water. Such lenses have to be carefully skimmed with low-yielding pumps, taking account of tidal effects. Water withdrawals

at rates that exceed recharge can result in upcoming of the underlying saline water, effectively destroying the freshwater lens. In the case of groundwater flow through massive fractured systems, horizontal galleries are often used as collectors but they need to intersect a certain number of productive fractures.

Pollution

7. Pollution of surface and groundwater by domestic sewage and industrial effluents is rapidly degrading the water resource base of many small island developing States. Not only is regulation of such waste disposal difficult to achieve but small island developing States also face particular problems in installing sewage and sewage treatment infrastructure. Steep, unstable terrain on volcanic islands makes the construction and maintenance of sewage mains difficult, and the low topography of atoll islands makes installation of conventional gravity systems almost impossible. Many rural areas have no choice but to resort to pit latrines. In addition, small island developing States are especially vulnerable to the effects of natural disasters (e.g., cyclones, earthquakes), which can damage their sewer and related water systems, thereby polluting both surface and groundwater resources.

8. All countries experience problems in disposing solid wastes. That problem is exacerbated in small island developing States by a limited spatial area and vulnerable groundwater resources, making the option of landfill disposal unsustainable over the long term. Small island developing States also often have high population densities located on the less steeply sloping lands along their coastlines, which increases the susceptibility of coastal water to pollution. Waste minimization and recycling can offer some scope for reducing groundwater pollution by reducing the dependence on landfills.

9. The disposal of partially treated or untreated domestic and industrial effluents in the sea has been a standard practice for many small island developing States. When biological waste predominated, such disposal did not pose too many problems as long as the discharge outlets were correctly designed and maintained. However, indiscriminate disposal into near-shore environments with poor flushing to the open sea has reduced coastal water quality, particularly near large coastal lagoon settlements. As chemical and organic pollutants become more pervasive, the adverse impact on marine environments is increasing, and long-term accumulation in marine ecosystems is threatening biodiversity and the local fishing industry upon which many small island developing States are highly dependent.

Financing and regulating water supply and sanitation utilities

10. Achieving economies of scale in providing water supply and sanitation services is difficult under the physical and socio-economic conditions of many small island developing States. The financing and management of water supply and sanitation utilities to service growing populations and tourist facilities is difficult when concentrations of population and the sources of water are small and widely dispersed. For instance, ring mains along accessible coastal zones may be the only options in many cases, but they must have long stretches and would be prohibitively expensive to install and maintain. Equally, the procurement cost of water-related equipment is high, given high transport costs and little chance to negotiate bulk discounts. For moderately populated islands, the overheads associated with running water services are particularly high, and the consumer base is often so poor that setting tariffs at levels that would recover the cost of the water services can prove difficult.

11. The regulation of water and sewage utilities to ensure adequate conformity to public health guidelines and the achievement of financial sustainability is difficult. The scope for setting realistic performance targets and providing appropriate incentives is extremely limited when the financial and operational base is so small.

Demands of irrigated agriculture

12. Irrigated agriculture is very important for many small island developing States. With transport costs high, pressure to grow market crops raises water demands for irrigation. Bulk water demands are made on an already limited resource base, and often compete with demand for raw water for potable supplies. The expansion of irrigated agriculture is already polluting local surface and groundwater sources, as fertilizers and pesticides are applied in increasing amounts.

Coping with the demands of tourism and industrial development

13. High water consumption by tourists and consequent production of waste water, particularly in coastal settings, poses problems for liquid and solid waste disposal on coastal aquifers or atoll freshwater lenses. Indeed, the marketing of small island developing States as "sun, sea and sand" paradises has resulted in many hotels being built on or near beach areas, thereby concentrating waste-producing establishments near coastal waters. Industrial activities are also located in the coastal centres. On account of weak or absent standards and/or waste-disposal facilities, the environmentally sustainable disposal or treatment of wastes,

particularly liquid wastes, has in several cases been left to the operators of hotel establishments and industrial facilities, often with little success. In view of water scarcity there is pressure to import costly energy-intensive desalination plants, notably those using reverse osmosis, to supply hotels and processing industries, such as breweries and fish-processing plants.

Implementation of integrated management and environmental protection

14. The difficulty of implementing drainage basin controls and environmental protection, coupled with economic development of tourism, agriculture and industry can severely reduce the spatial extent of drainage basins that furnish freshwater supplies. In the Caribbean, for example, the expansion of banana cultivation has reduced protected catchment areas. Many islands that derive their water from filtered intakes in the upper catchments of radial streams have major erosion problems in catchment areas, mainly because of ad hoc land development and poorly maintained roads. Equally, municipal well fields are compromised by pit-latrine development in localized borehole catchments.

15. To date, many small island developing States management and regulatory regimes have not adequately considered the dynamics and integrated nature required to address island hydro-systems. The sectoral approach to management has not proven adequate in addressing a variety of vital development and environmental issues, particularly public health and environmental sanitation. It also does not adequately consider other public or private sector involvement, thereby minimizing the role of communities in the decision-making process.

Human resources needs

16. For many small island developing States, the needed technical and scientific data are either missing or inadequate because of shortages of expertise to collect and analyse them. In fact, the population of many small island developing States is too small to justify the establishment of sufficiently advanced technical institutions, resulting in a shortage of trained technical and other needed expertise. Thus, water projects are often implemented without accurate knowledge of the availability and sustainability of water resource systems.

Public awareness

17. There is much evidence that indicates that the level of awareness about water resource issues is very low in small island developing States. Demand management is sometimes rendered ineffectual when cultural expectations and habitual practices linked to water prove difficult to change in times of increased demand and severe patterns of drought. However, the relatively small size and spatial concentration of the populations in many small island developing States can make the task of public education and outreach more manageable. The potential benefit of such public awareness programmes can be very high.

III. Regional cooperation in sustainable management and use of freshwater resources

18. The benefits of pooling experience and expertise in freshwater resource management are well recognized. Inter-island associations have been set up to promote such sharing of experiences and to provide a degree of leverage in procuring equipment and services. Such associations can involve not only island-to-island links but also triangular links with developed countries through bilateral and multilateral assistance.

19. A regional water supply and sanitation project in the Caribbean was started in 1979 and operated in the region for more than 10 years. The presence of the project in the islands for a prolonged period, and the exploration, assessment and planning of water resources that the project carried out attracted a great deal of external support for improving water supply in all the participating countries. At the end of the regional project, part of its equipment and library was transferred to the Caribbean Environment Health Institute and part to the Caribbean Institute of Meteorology and Hydrology, which continue together to carry out a number of the activities of the regional project. A twin project in the Pacific was subsequently initiated in 1986, and continues under the auspices of the South Pacific Applied Geoscience Commission. The project has assisted 15 island countries of the South Pacific, and has dealt with many of the above-mentioned problems. It has administered and technically supported 15 country projects in six countries.

IV. Activities of the United Nations system in support of small island developing States

20. To continue providing assistance to the developing countries, the Economic and Social Commission for Asia and the Pacific published technical guidelines in support of

national efforts in (a) sustainable development of water resources (guidelines on water and sustainable development: principles and policy options, issued in August 1997), and (b) water-related disaster reduction and management (guidelines and a manual on land-use planning and practices in watershed management and disaster reduction, issued in October 1997). The guidelines were subsequently distributed to member countries, including small island developing States.

21. The post-United Nations Conference on Environment and Development policy of the United Nations Environment Programme (UNEP) is consistent with the urgent need to take action to support the sustainable development of small island developing States, particularly for the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States. Through its Industry and Environment Programme Activity Centre, UNEP has provided assistance for the environmentally sustainable management of hotels. Through its International Environment Technology Centre, UNEP is cooperating in regional exercises, including in small island developing States, to prepare regional source books on technologies for augmenting water supplies. The source books represent an important contribution to ongoing efforts to address water scarcity, especially household water security.

22. The United Nations Development Programme (UNDP), with the technical assistance of the United Nations Secretariat, has initiated and implemented regional projects for water in the Pacific and Caribbean islands. UNDP has also helped Cape Verde to prepare a national water master plan and assisted Comoros with the delicate construction and operation of wells tapping coastal aquifers for drinking water supply.

23. The World Hydrological Cycle Observing System (WHYCOS) developed by the World Meteorological Organization (WMO), with the support of the World Bank, the European Commission, France and other donors, was initially established to install a global network of about 1,000 stations on major rivers to monitor discharge and water quality, and to transmit data in near real time via satellites to global, regional and national centres. The process of establishing a WHYCOS subsystem for the Caribbean region is currently under way, and is receiving wide support from the countries in the region, which are fully aware that effective regional cooperation is needed at a time when many are experiencing dramatic reductions in both basic and specialized observation networks. Plans have also been initiated to explore the establishment of a WHYCOS subsystem in the Pacific region, where again the emphasis will be on island States. Enhanced monitoring and information exchange is critical in that region, particularly in view of the recent disastrous impacts of El Niño on several small island developing States.

24. The cross-cutting character of disaster reduction, as defined in the International Decade for Natural Disaster Reduction (IDNDR), provides an effective link between various strategy objectives of sustainable development, such as freshwater resources, taking into account the particular needs of small island developing States. With regard to water, disaster reduction activities can contribute to the sustainable development of small island developing States through, *inter alia*, an accurate assessment of available freshwater resources and of the natural-hazard-induced risk for water infrastructure. The International Framework of Action for IDNDR is actively involved in the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States. The IDNDR secretariat has also promoted projects for research, hazard assessment and early warning specifically aimed towards the needs of small island developing States.

25. The Global Environment Facility (GEF) is currently supporting projects related to sustainable management and the use of large marine ecosystems. Within that context, UNEP, UNDP and the World Bank are collaborating in assisting small island developing States within the GEF framework, including efforts at the regional level to facilitate the environmentally sustainable use of freshwater and coastal waters and their living resources. The World Bank is also financing a regional solid waste management programme in the Caribbean to mitigate groundwater pollution, among other environmental impacts. In addition, the Asian Development Bank is financing the development of water utilities in the Federated States of Micronesia.

V. Recommendations for future action in the area of freshwater resources

A. Enhancing integrated planning and management

26. Even more than non-insular countries, small island developing States need an integrated approach to water resources management that includes strengthening institutions that can fundamentally affect their environmentally sustainable management and use of water resources. Such an approach includes the formulation/revision of national policy and strategies, as well as action plans involving various interested actors: local authorities,

non-governmental organizations, civil society, the private sector and users of water resources. Cross-sectoral collaboration between land and water planning should be actively promoted, and the effectiveness of water and environmental agencies to monitor and enforce good spatial planning practice in fragile upland and coastal zones needs to be enhanced. In addition, there is a need to consider the adoption and application of environmental risk assessments, remote sensing for land use and micro-zoning.

B. Promoting technical cooperation among small island developing States

27. Small island developing States often need island-specific or regional studies to identify and assess their water resources, and to formulate and implement effective development and management programmes. To that end, some small island developing States in different regions have organizations that can share their technical expertise and experience with other small island developing States. Establishment of relevant institutions, where needed, is one means of facilitating such exchange; one existing example is the Pacific Water and Waste Association. It would also be helpful to encourage linkages between small island developing States and the bigger archipelagic countries that have development programmes for their outer islands.

C. Promoting water resources assessments

28. Governments are urged to take measures aimed at reversing the growing decline in national hydrological networks. They should support initiatives for the maintenance and improvement of hydrological and relevant meteorological observation programmes, such as WHYCOS, in order to enhance the provision of comprehensive data and information for applications, user services and for research; that is especially crucial in many developing countries, where international assistance needs to be enhanced. Efforts should also be directed at facilitating international exchange of hydrological and related data and products, and strengthening national and regional capacities through training and technology transfer, so that global studies of freshwater resources and climate change and variability can be conducted and useful results produced for the benefit of people living on small islands.

D. Promoting policies encouraging efficient management and use of existing water resources

29. Further efforts are required to promote demand management, efficiency of water services and protection of water sources. Demand management and leak detection can help to conserve the existing resource base. Proactive programmes of waste management and minimization can help to protect the resource base but must be clearly linked to land management policies if they are to be effective.

E. Promotion of techniques and methodologies appropriate for small island developing States

30. Technologies more appropriate for small island developing States, such as rainwater harvesters, groundwater collectors through horizontal galleries, radially drained wells to skim freshwater lenses and low-yielding solar pumps, need to be promoted to avoid last-resort solutions, such as desalination. Further identification and application of cleaner production methodologies, relating to the specific development and resource needs of small island developing States, should also be priority activities. They should include cleaner practices and efficient use of water resources in all industries, particularly the growing industrial and agricultural sectors, hotels and tourism facilities.

31. The unique characteristics of small island developing States calls for action to develop self-sufficient facilities for handling solid waste, sewage and waste water, and facilities for preventing groundwater contamination.

F. The island systems management approach

32. The diminutive size of small islands means that sustainable socio-economic development and the needed natural resource base, including water resources, are interdependent. Thus, consistent with the thrust of the Programme of Action, the management and use of freshwater, coastal and marine resources should be undertaken within an institutional framework that takes into account linkages with the sources of potential impacts on those resources.

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Report of the Secretary-General

Addendum

Land resources in small island developing States*

Contents

		Paragraphs	Page
I.	Introduction	1–2	3
II.	Land resources issues	3–9	3
III.	Actions taken to address issues	10–23	4
	A. Information systems, integrated land resources planning and management	10–13	4
	B. Farming systems and soil management	14–15	5
	C. Forestry	16–17	6
	D. Water resources	18	6
	E. Natural areas protection and coastal area management	19	7

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99-00675 (E) 020299

	F.	Participatory research and development	20	7
	G.	Natural disasters	21–22	7
	H.	Physical planning and development	23	7
IV.	Conclusions and recommendation for future action		24–28	8
	A.	National and local levels	24	8
	B.	Regional level	25–26	8
	C.	International level	27–28	8

I. Introduction

1. Small island countries vary enormously according to distinct geographic, biological, social, cultural, and economic characteristics but share many common disadvantages which constrain their efforts to develop and conserve their environments, including limited natural resources and limited prospects for agricultural development and food security; vulnerability to natural hazards, such as cyclones, volcanic eruptions, earthquakes and climate extremes; fragility of ecosystems, with high species endemism and potential for loss of biological diversity (including agro-biodiversity); risk of long-term damage from rising sea levels associated with global climate change; declining prospects for traditional agricultural export commodities; susceptibility to introduced pest infestations, erosion and pollution; population pressures; inappropriate tourism development; difficulty in retaining skilled human resources due to lack of opportunity; extreme dependence on and vulnerability to external economic factors; and high costs of transport and communications. Many of these disadvantages hinder the achievement of the sustainable management of land resources, and several are dealt with directly in other parts of the report of the Secretary-General on the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States (see E/CN.17/1999/6 and addenda).

2. Because of their strictly circumscribed resources, the interactions between the human dimensions (population, demographics, land tenure, livelihoods etc.) and the biophysical aspects of land resources (soil types, relief, climatic variation) are of central importance for sustainable development. Beyond this, a better understanding of the interactions among the sectors and land uses of agriculture, forestry, aquaculture, nature conservation, coastal protection, fisheries, tourism, industry, mining and human settlements will be necessary for appropriate decision-making. The competing demands on land resources must be resolved, and more effective and sustainable ways of using these resources must be developed and adopted. In paragraph 30 of the Programme of Action, Governments recognize that most aspects of environmental management in small island developing States are directly dependent on or influenced by the planning and utilization of land resources, which in turn are intimately linked to coastal zone management and protection in those States. Mechanisms for an integrated planning and management of land resources, including inland and coastal areas, are of great urgency and importance in small island developing States.

II. Land resources issues

3. Human settlements, agriculture, commerce, industry and tourism development have historically been the major competing uses for limited land resources in many small island developing States. Conflicts in allocation and appropriate use continue to increase as human needs and population expand at faster rates, producing greater pressure on finite land mass and natural resources.

4. Multiple factors and casual relationships influence the management of land resources: high population pressure on a limited land area, as well as limited frontier or reserve areas for migration; deforestation due to unsustainable commercial logging or conversion to agricultural or grazing uses; soil erosion, in particular on sloping land, soil fertility decline and subsequent downstream degradation; loss of biological diversity, including agro-biodiversity; intensification of agricultural areas, specifically in coastal lowlands; the influence of tourism on fragile coast areas; and intensive use of sea resources. Small island developing States are also highly vulnerable to natural catastrophes and environmental disasters, including changes associated with sea level rise issuing from climatic conditions.

5. Increased demands for cash income have led to greater production of export cash crops and inappropriate tourism development. For agriculture, this has meant increasing areas of cultivation and more mechanized production systems. Land pressures in some small island developing States have recently become further aggravated by the intensification of animal production, particularly high input production chains which are dependent on concentrate feed. Unsustainable agricultural practices have contributed to deforestation; changes in cropping pattern and subsequent losses of biodiversity across the landscape; loss of soil fertility; and agrochemical pollution of soils, freshwater and coastal resources downstream.

6. Furthermore, land tenure and other policy issues critically affect land management, as do multiple socio-economic factors, including trade and the influence of outside markets, traditional and cultural practices, and demographics. Because of the diversity in natural and human conditions, small island developing States do not generally exhibit common land tenure problems. The main exceptions are limited access due to land/resource scarcity and associated conflicts, the impact of skilled human resource out-migration on the regular maintenance of cadasters, land registries and records, and the constraints of poor transport and communications infrastructure on the implementation of land tenure legislation. One common tenure action,

undertaken by many small island developing States to relieve the problem of land/resource scarcity, has been the trend to extend marine territorial boundaries beyond the previous three-mile limit.

7. National decisions and the capacity to manage land resources sustainably can also be constrained by external factors and the impacts of inappropriate development strategies pursued in the past, including unequal negotiations for rights to exploit natural resources by national and foreign companies, and poorly designed projects financed by donors which have been based on purely economic considerations. As a result, many Pacific small island developing States, for example, have pursued new industrial development, targeting export growth in agriculture, forestry and tourism without adequately taking into account social and environmental costs. The pressure to which land resources have been subjected by these development efforts and the substantial and sometimes disastrous degradation and depletion which has occurred have begun to focus the attention of communities on the need to implement sustainable management of those remaining resources.

8. Cause and effect relationships and issues of land resources are not limited to and cannot be resolved by only addressing biophysical characteristics and constraints. The complexity of issues calls for an integrated and participatory approach, requiring interdisciplinary, intersectoral, and multi-institutional efforts. Small island developing States rarely have an extensive and stable cadre of professional expertise, resulting in multiple tasking of few individuals. For this reason, the availability of information on land resources and appropriate tools, guidelines and technologies for their utilization are of the utmost importance for implementing sustainable land use options and informing policy decisions. To design policies on land resources in these small island developing States, information is needed on optimal resource use, trade-offs between sectors and the availability of environmentally sound technologies.

9. Efforts have been undertaken to address the key issues identified in the Barbados Declaration by multiple stakeholders, including international agencies, national Governments, international, national and local non-governmental organizations, and communities. Regional efforts supported by these different stakeholders have been successful in coordinating collective needs, strategies and information flow. A limited list of examples of efforts in addressing the issues is set out below.

III. Actions taken to address issues

A. Information systems, integrated land resources planning and management

10. The World Bank, the Inter-American Development Bank, the Caribbean Development Bank, the United States Agency for International Development (USAID), the Canadian International Development Agency and the Food and Agriculture Organization of the United Nations (FAO) have funded projects in several small island developing States for the preparation of policy instruments, environmental impact assessments, guidelines and draft legislation for several aspects of resource surveys and assessments, land use planning and management, institutional strengthening, watershed and protected areas management. The Department of Economic and Social Affairs of the United Nations Secretariat and the United Nations Centre for Human Settlements (Habitat) have been assisting small island developing States in the Caribbean, with United Nations Development Programme (UNDP) financing, with the development and expansion of computer-based geographical information systems (GIS). Regional training needs have been assessed and a programme of assistance formulated. One output of a ministerial meeting in Barbados in 1995 was the establishment of a task force comprising Barbados, Jamaica, Saint Vincent and the Grenadines, the Organization of Eastern Caribbean States (OECS) and Habitat to initiate a harmonized regional database. In addition, institutional strengthening and capacity-building measures have been undertaken at the national level in many countries, with the support and assistance of Habitat/UNDP. These include technical cooperation programme initiatives, fellowships and in-service training. OECS has been sensitizing national Governments on the concept of island systems management. This approach recognizes the need for a holistic approach to the use of island resources. It seeks to eliminate sectoral boundaries through the establishment of a multisectoral, multidisciplinary mechanism, which links a partnership arrangement of public and private sectors, non-governmental organizations and community-based organizations in a decision-making process.

11. FAO is promoting an improved approach to land resources management based upon successful experiences, as well as existing approaches developed by other institutions. The improved approach emphasizes the integration of physical, socio-economic and institutional aspects of land use, and stresses the need for the active

participation of all stakeholders in decision-making. Although not specifically developed for small island developing States, this approach is highly appropriate. FAO has developed frameworks and guidelines for the implementation of the approach, including documents entitled "Our land our future: a new approach to land use planning and management" (1996); "Negotiating a sustainable future for the land, structural and institutional guidelines on natural resource management in the twenty-first century" (1997); and "The future of our land: facing the challenge, guidelines for integrated planning for sustainable management of land resources" (1998).

12. Specific small island developing States-associated projects have been completed in Grenada to assist decision makers and land users in sustainable planning and management of the country's land resources. A critical component of these activities is the development of a national computerized land information system to increase the effectiveness of planning and implementation of development programmes, as well as to address the needs of multiple agencies. The system incorporates a comprehensive GIS database. Land use planning, management and information systems workshops for Caribbean countries have been held in Grenada, resulting in the development of agro-ecological zoning and land use planning guidelines. Similar efforts have been made in Trinidad and Tobago, Saint Lucia and Belize. The Export Development and Agricultural Diversification Unit of the Organization of Eastern Caribbean States has requested FAO assistance in developing a land use planning and agricultural production zoning mechanism for OECS. Information and corporate software has been distributed to institutions working on land use characterizations and classification in Fiji, Tonga and Vanuatu.

13. In the South Pacific small island developing States, the dissemination of information and feedback of views on a new approach towards planning for sustainable use of land resources is continuing, consistent with priorities for implementing integrated approaches to resource management identified within the framework of national environment management strategies. An inventory of land resource information systems has been compiled for the subregion to assess the comprehensiveness of thematic data coverage and to evaluate their adequacy for land resource planning purposes. In Fiji, a project was designed to develop a strategy and decision support system for an integrated approach to land resources planning and management. Reports of similar assistance have been received from the Solomon Islands and Samoa, the latter awaiting approval of a new land use policy. A project is being prepared to undertake a comprehensive assessment on the magnitude of land degradation and its effects on the people and food security of island countries in the subregion, consistent with guidelines and methodologies used in South-East Asia. The International Institute for Environment and Development (IIED) documented a strategic approach to island development, drawing on the experiences of IIED, the World Bank and the World Conservation Union (IUCN) in a document entitled "Small island States and sustainable development: strategic issues and experience".

B. Farming systems and soil management

14. The farming systems approach to development is considered to be potentially useful in improving planning and analytical capacity in identifying, developing and implementing ways to improve the productivity — and therefore welfare — of those involved in agriculture in a manner that is equitable and sustainable. As a result, FAO is now working with the Institute of Research and Extension Training in Agriculture of the University of the South Pacific in Samoa to implement training sessions on the farming systems approach and to produce regionally specific training and extension materials. Seven countries in the South Pacific were associated with the project — the Cook Islands, Fiji, Papua New Guinea, Tonga, Solomon Islands, Vanuatu and Samoa. Outputs included documents entitled "An introduction to the farming systems development for the South Pacific" and "The farming systems approach to sustainable agriculture development in the South Pacific". Recommendations to institutionalize the farming systems approach into national programmes, build further awareness of this approach and train extensionists in the methodology have been the result of these successful programmes.

15. Sustainable land stabilization and soil conservation programmes have been undertaken within the broader framework of the protection and enhancement of the fragile island environment. A soil erosion control programme was formulated in Jamaica. In Samoa, the preparation of the World Overview of Conservation Technologies initiative has been completed. In Barbados, a development programme has been formulated for the stabilization and conservation of the scarce and highly erosion-prone arable lands in the Scotland District and the general rehabilitation of agriculture in the area. Training efforts and strengthening human resource capacity within the local soil conservation unit have been undertaken. The work resulted in a policy entitled "A new framework for conservation-effective land management and desertification control in Latin America and the Caribbean".

Sponsored by the Fertilizer Advisory Development Information Network for Asia and Pacific, a subregional workshop on environmentally sound fertilization in the Pacific islands was held in Samoa. Work will soon commence on compiling available information on soil and plant nutrition in selected countries (Fiji, Samoa, Tonga) for preparing profiles on integrated plant nutrition systems before developing national soil fertility management strategies, in particular for low islands and atoll countries in the subregion. Many of the Pacific island countries have embraced a policy entitled "Framework for action on the conservation of lands in Asia and the Pacific". Among the collaborators were the International Board on Soil Resources and Management (IBSRAM) Pacificland Network and the European Union-funded Pacific Regional Agriculture Programme. Through the Pacific Land Network, the issues related to steep lands and land intensification are being addressed in Fiji, Papua New Guinea, Vanuatu and Samoa. The work is seeking to assess the extent of the problems of land degradation, and to develop acceptable technologies for sustainable agriculture based on existing systems and local technical knowledge.

C. Forestry

16. A number of initiatives have been undertaken at the national and regional levels, with the support and involvement of the donor community, including agencies, funds and programmes of the United Nations system. FAO, with UNDP, convened a regional meeting in Barbados in September 1997 to discuss a strategy for supporting the establishment of national forestry policies in Caribbean small island developing States. Work is ongoing as a result of the meeting for elaborating such policies in a number of Caribbean small island development States, with technical support from FAO. In addition, the UNDP Forest Capacity-Building Programme is currently supporting initiatives for the development of national forestry action plans. A project for Jamaica has been most recently approved by the UNDP Capacity 21 Management Committee. Watershed management and conservation education projects, as in Samoa, integrate conservation farming systems and agroforestry practices in addressing the interrelationship of upstream-downstream aspects. Financial assistance and advisory technical services were provided to support a working group on agroforestry for the Pacific to document the wealth of indigenous and technical knowledge and experience associated with such systems. The agroforestry information toolkit, prepared at a regional participatory workshop in Fiji in 1997, targets extension level personnel, and will be published as a joint effort of, *inter alia*, FAO, IBSRAM, UNICEF and 60 national resource persons.

17. The three-year Pacific Islands Forests and Tree Support Programme is assisting the 22 Pacific island countries and territories in strengthening national and community capacities in the use, management, conservation and development of their forest and tree resources on a sound and sustainable basis. The emphasis of the programme will be to support national and community initiatives that will create employment opportunities and enhance the sustainable livelihoods of their people. It will provide technical, training and other support to national and local economies. FAO assistance has been requested for a regional watershed management project for the Cook Islands, Fiji, Tonga and Samoa. The Government of Fiji has also requested FAO assistance to carry out a review of the return to resource owners and government from forests and forest products harvesting, processing and marketing. FAO assistance was provided through a European Union-funded regional project on forestry policies in the Caribbean in the analysing of forestry policy in 28 Caribbean countries and territories, and the identification of opportunities for institution-strengthening and strengthening forestry policy analysis capacity.

D. Water resources

18. FAO activities in Fiji addressed sedimentation control, flood mitigation, river improvement and watershed management. Dredging activities in the main rivers in Fiji resulted in an improvement of poorly drained and underutilized land, and led to an agricultural development programme for an area of 6,300 hectares in the Central Division. A subsequent project identified the major causes for erosion and the high sedimentation of the Rewa River, and elaborated a detailed programme combining legal aspects, flood control, river regulation and appropriate land management practices for sustainable development of agricultural lands. There was also a project to increase food production through expansion of arable land by reducing flood risks and improving the drainage capacity of the major rivers. A water resources assessment was commissioned in February 1997 to provide technical options for introducing small-scale low-cost supplementary irrigation and water control schemes into rainfed cropping sites of the FAO Special Programme for Food Security in Papua New Guinea. This is a multidisciplinary project, which is also doing an analysis of socio-economic constraints. Elsewhere in the region (Samoa, Solomon Islands), assistance is planned to

identify water control components in conjunction with new project preparation exercises linked to expansion of the activities of the FAO Special Programme for Food Security.

E. Natural areas protection and coastal area management

19. A number of small island developing States are beginning to develop innovative programmes to save their forests and coral reefs. These programmes mean that island peoples can still use their forests and reefs as a traditional source for food, fish, renewable wood products and the sustainable harvesting of the majority of species of plants in the forests that are not trees. Saint Kitts and Nevis, and Aruba have planned the expansion of protected areas. In 1998, FAO issued a document entitled "Guidelines on integrated coastal area management and agriculture, forestry and fisheries", applicable in large measure to small island developing States. It includes a section on the issues, perspectives, policy and planning process for integrated coastal area management, as well as more specific advice on integrating agriculture, forestry and fisheries into coastal area management, and on conflict resolution.

F. Participatory research and development

20. A USAID-funded programme brought universities, national programmes, non-governmental organizations and farmers together. The two-year programme resulted in changes in the national agricultural research system of Cape Verde, including the establishment of an institutional framework for long-term research planning; establishing a participatory monitoring and evaluation programme; maintaining and promoting highly trained, quality researchers; establishment of inter-institutional collaboration and implementation of interdisciplinary research; establishing and maintaining linkages with farmers and the extension service; and conducting on-farm research.

G. Natural disasters

21. An important consideration in the use of land resources is to identify the susceptibility of specific land areas to the impact of natural disasters. The office of disaster preparedness in Jamaica undertook one of the first efforts at natural hazard mapping in the Caribbean. The Organization of American States, with financial support of USAID, carried out landslide hazard assessment in the OECS countries, and is continuing with coastal storm surge hazard assessment, in conjunction with the Caribbean Meteorological Institute. The Government of Jamaica has recently adopted new guidelines for land use planning, which calls for special zoning regulations. The Caribbean Disaster Emergency Response Agency, in conjunction with FAO, is working with Eastern Caribbean States in developing the details of national and regional hurricane disaster preparedness, and impact mitigation strategies related to agriculture, forestry and fisheries. Components include a review of environment for information management in the sector, sector hurricane preparedness and mitigation action plans, and public education and awareness.

22. FAO on-site advice and support assisted Tonga in gaining emergency assistance (fertilizers and seeds) following cyclone Hina in March 1997, which severely disrupted household food supplies. Also, assistance was given to the Bahamas to recover from hurricane Lili (1997–1998), to the Dominican Republic in response to the effects of El Niño (1998) and to Seychelles for flood mitigation (1998). Given the exposure of the Pacific subregion to tropical cyclones and drought and their consequent effects on food supply, a subregional project is being prepared with extrabudgetary funding to assist member countries in developing standard methodologies and approaches towards crop assessment and reporting. To date, Fiji, Papua New Guinea and Tonga have expressed support for this proposal.

H. Physical planning and development

23. A number of initiatives have been pursued at the national and regional levels with the support of agencies, including Habitat/UNDP, the Organization of American States and the Caribbean Disaster Mitigation Project. Technical assistance to physical planning units has been supplied for the preparation of physical development plans, and for institutional strengthening through training of personnel and provision of GIS equipment. The initiatives include the preparation of building codes and guidelines, planning and infrastructure standards, physical planning legislation, national physical development plans, and housing and land management policies.

IV. Conclusions and recommendation for future action

A. National and local levels

24. Critical areas to better address land resources include the need to better understand land use objectives and land user options; the need for institutional collaboration and coordination of ministries; the need to implement land dispute resolution systems; the need to use technologies as a basis for land use decision-making; and the need to address public education regarding land management. Sustainable land management will call for:

(a) Information. In a general sense, this will entail removing constraints, providing incentives and developing improved technologies; creating institutional arrangements for involving all stakeholders in management and decision-making; establishing efficient and effective land resources management through the activities of a network of groups; creating information systems accessible to all; and providing information and technical support for decision-making;

(b) Collaboration. Institutionally, there is a need to take an intersectoral approach to addressing the complex issues of land resources. This will entail the adoption of an integrated planning process, with enhanced collaboration on the part of different government agencies, universities, non-governmental organizations, community groups and others to optimize and utilize the comparative advantage of each;

(c) Integrated approaches. Numerous tools, approaches, techniques and guidelines have been developed which small island developing States can take advantage of to address issues of land resources. Tools and approaches and capacity-building activities should encourage a participatory approach. This should engage all stakeholders in the planning design, and implementation of practices and policies to address land resources, and should act as a platform to share ideas. These include approaches to land planning and management, negotiation and conflict management, information and decision support systems, island systems management and farming systems approaches. Training in the use and institutionalization of these tools, approaches and guidelines should be undertaken;

(d) Environmental awareness. Natural resource conservation should be strongly promoted by making people aware of the fragile and finite nature of these resources in today's conditions; promoting diversification; attempting to rehabilitate traditional attitudes and value systems and using community-based approaches to resource use; and making communities fully responsible for managing them.

B. Regional level

Expertise and communications

25. Relevant regional bodies should be strengthened and the exchange of technology, expertise and ideas should be promoted. Mechanisms must be put in place to enhance communication networks which have been developed, as well as to develop those which are still needed. Recognizing the complexity and diversity of the natural resource management task, and the difficulty and financial burden associated with the provision of the required multidisciplinary teams of professionals in each country, the establishment of an appropriate regional mechanism within one of the existing regional organizations might be considered. This mechanism would provide resource management services to small island Governments, make available skills and experience which would be much more difficult to build at the national level, and facilitate the transfer and sharing of technical information and research results.

Coordination

26. Effective coordination between regional institutions, universities and other relevant programmes or initiatives should be encouraged on measures designed to establish an integrated approach to the planning and management of land resources.

C. International level

Facilitation and coordination

27. International agencies must better coordinate their efforts in assistance to small island developing States. They should assist in the strengthening and support of regional networks. Agencies should facilitate the adoption and implementation of appropriate integrated planning processes for natural resources as a means of ensuring their sustainable use.

Technical assistance

28. Technical assistance should be provided:

(a) In support of information systems for effective decision-making regarding land resources by appropriate agencies, and in support of promoting networks involving

users and decision makers at the regional and national levels for the development of information systems, so as to ensure access to data and information of small island developing States;

(b) In establishing systems for monitoring land and water resources and preparing periodic reports on the state of the land and water resources in small island developing States to be used for prospective studies and policy decisions by small island developing States. Such reports should highlight trends in land and water resources;

(c) To assess and revise, if needed, national legislation, implement appropriate training, and enhance database development and its application for integrated land use planning and management.

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Progress in the implementation of the programme of action for the sustainable development of small island developing States

Report of the Secretary-General

Addendum

Biodiversity resources in small island developing States*

Contents

		Paragraphs	Page
I.	Introduction	1	2
II.	Major problems	2	2
III.	Progress made in the conservation of biodiversity	3	2
IV.	A success story: the Bahamas biodiversity data management project	4–6	3
V.	Constraints encountered in implementing measures to conserve biodiversity	7	4
VI.	Priorities for future action	8	4
	A. At the national and regional level	8	4
	B. At the international level	9	5

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I. Introduction

1. Biodiversity in many small island developing States is threatened by a combination of factors, including the fragility of their ecosystems and widespread anthropogenic interventions. People of small island developing States rely heavily on their biological resources for their economic, social and cultural well-being. To that end, conservation and sustainable use of the biological resources of those States is essential. Effective conservation and sustainable use of biodiversity entails, *inter alia*, the sustainable management of habitats and genetic resources for food and agriculture, including forestry, fisheries and aquaculture. Among other factors, the issues and challenges posed by structural adjustment and economic reforms, the trend towards economic globalization and trade liberalization and demographics have a bearing on the implementation of effective sustainable management policies and measures.

II. Major problems

2. The major problems related to the conservation of biodiversity in small island developing States include the following:

(a) Demographic and economic pressure. Many small island developing States are experiencing high rates of population growth. In the face of increased need for food supplies, most small island developing States are facing a decline in available seafood as a result of over-harvesting of staple inshore food fish. The rapid population rise in many small island developing States threatens both their marine and terrestrial biodiversity because it leads to intensive fish harvesting, which depletes fish stocks and to unsustainable fishing methods, the use of dynamite for instance, which are very destructive. The same pressures lead to the clearing of forests for the expansion of agriculture. Population growth also increases the demand for residential and industrial land, thus contributing to the rapid depletion of forests and to the construction of buildings on agricultural land. In some cases, attempts to reclaim land have led to the destruction of mangroves. Furthermore, population growth results in large quantities of waste, which, owing to limited space, is difficult for many small island developing States to dispose of without causing environmental degradation. Such waste when dumped in to bodies of water, causes water pollution and the degradation of the habitat.

(b) Natural disasters. The impact of natural disasters (hurricanes, typhoons, volcanic eruptions etc.) on the biodiversity of small island developing States is usually greater than in larger countries in terms of the proportion of the damage, because of the narrow habitat ranges, and the small population sizes of many species in these countries. The high degree of endemism of many plant and animal species within small island developing States means that their species are especially vulnerable and even susceptible to extinction in the face of severe natural disasters. For example, the mountain chicken (a frog) in Montserrat is thought to have become extinct because of the acidification of standing water on the island as a result of recent volcanic eruptions.

(c) Introduction of exotic genetic resources. Over half the small farms in small island developing States are based on subsistence farming. This may be environmentally-friendly, but has the disadvantage of low productivity. Owing to population and economic pressures, farmers are increasingly using modern cultivars to attempt to increase agricultural productivity. As the trend continues, exotic genetic resources are likely to replace the local, low-yielding cultivars, resulting, over time, in a loss of plant and animal genetic resources.

III. Progress made in the conservation of biodiversity

3. In the five years since the adoption of the Barbados Programme of Action for the Sustainable Development of Small Island Developing States, some progress has been made in implementing measures for conservation of biodiversity in those States. The major initiatives include:

(a) Ratification of the Convention on Biological Diversity and the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Most small island developing States have ratified the Convention on Biological Diversity. A number of them also have prepared country studies on biodiversity and national biodiversity strategies and action plans. A few small island developing States are also preparing national biosafety frameworks. In almost all small island developing States, national strategies for biological diversity have been incorporated into planning structures (e.g., the National Environment Management Strategy and in integrated coastal areas as well as marine resources plans). At the international level, the negotiations of the Biosafety Protocol of the Convention on Biological Diversity are nearing completion. The Protocol will be finalized in Cartagena this year. Its goal is to safeguard biodiversity against the possible adverse effects of genetically-and-living modified organisms, as well as to contribute to the conservation of biodiversity in all countries,

including small island developing States. In response to a decision of the tenth Meeting of the Conference of Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the secretariat of the Conference adopted measures to assist small island developing States to ratify the Convention. The measures include: (i) designation of a small island developing States coordinator for activities relating to the Convention; (ii) preparation of information packages; (iii) provision of technical assistance; and (iv) encouraging non-parties to the Convention to promote compliance with its requirements.

(b) Development of regional plans to conserve biodiversity. Small island developing States in all regions have developed regional action plans for implementing the Barbados Programme of Action. The plans identify major issues, as well as actions needed to address priorities, of which biodiversity is one. Regional strategies for implementing the International Coral Reef Initiative have also been adopted in all regions. Regional organizations (e.g., the South Pacific Regional Environment Programme), have embarked on capacity-building programmes and have undertaken to provide specialist support to participating countries.

(c) Review of small island developing States' biodiversity: A Global Review of Biodiversity in Small Island Developing States has been carried out by the World Conservation Monitoring Centre. The Food and Agriculture Organization of the United Nations (FAO) has carried out a review of the uses and status of trees and forests in land-use systems and has proposed measures for (i) the development of agroforestry strategies; and (ii) the conservation of diversity of species used in traditional agroforestry systems.

(d) Community involvement and use of traditional knowledge for ecosystems preservation. Community participation is a major theme in the small island developing States. Several national and regional programmes have been put in place involving the full participation of communities. In selected areas, communities have taken part in identifying their specific needs and have been assisted in the creation and implementation of their own community action plans. Successful examples include: (i) the Comoros integrated coastal areas management plans, prepared with full community involvement; and (ii) the Marine Turtle Conservation Strategy of the South Pacific. The United Nations Educational, Scientific and Cultural Organization (UNESCO) is keeping a record of and utilizing traditional ecological knowledge of biodiversity for a number of small island developing States.

(e) Protection of important sites. Small island developing States in all regions have assigned specific areas for biodiversity protection. Examples include: the Coastal and Marine Biodiversity Project in Dominica and 14 conservation areas in 11 States in the South Pacific, which are either in the design or implementation stages.

IV. A success story: the Bahamas Biodiversity Data Management Project

4. The Bahamas is an example of a large open-ocean island system. It consists of 35 major islands covering an area of 100,000 square miles of crystal clear water. Through its Biodiversity Data Management Project, the country has developed a Biodiversity Data Management Report and Plan which have resulted in:

(a) The establishment of the Bahamas Environment Science and Technology Commission, the hub mechanism/clearing house for coordinating and monitoring environmental and biodiversity activities;

(b) Establishment of an agency-wide mechanism for efficient management and processing of information in support of the Convention on Biological Diversity;

(c) Creation of a set of management tools to support the decision-making process;

(d) Establishment of the Bahamas Natural Resources Bibliography as a metadatabase on scientific research conducted throughout the Bahamas;

(e) The development of the Geographic Information System (GIS) node of the Bahamas Environment Science and Technology Commission with some computerized data on relevant biodiversity databases from various agencies.

5. The implementation of the project is an ongoing long-term activity. Additional work is required to develop procedures for updating management tools produced under the aegis of the project and for disseminating the collected information via different media (e.g., Internet).

6. Constraints encountered during the implementation of the project include: (a) inadequate availability of financial and human resources; and (b) inadequate national capacity for project implementation.

V. Constraints encountered in implementing measures to conserve biodiversity

7. The major constraints encountered are summarized below:

(a) Inadequate financial and human resources. The conservation of biological diversity is not given sufficient priority in national programmes. As a result, there is a low level of funding for biodiversity initiatives. However, some funding is allocated to activities which contribute to the sustainable use of biodiversity resources, for example, pollution control, which contributes to habitat protection. Small island developing States often have an inadequate human resources capacity to implement sustainable development projects. Existing personnel are often overloaded with other work, leaving little time or resources to address biodiversity issues. In some cases, protected areas have been established but not satisfactorily maintained owing to inadequate human and financial resources.

(b) Inadequate coordination among agencies. There have been several attempts by international agencies to implement projects on the conservation of biodiversity in the small island developing States. However, the overall effect has been minimal, in part owing to uncoordinated agency activities.

(c) Lack of coordination at the national level. Most small island developing States do not properly coordinate their development activities. Conservation of biodiversity is an interdisciplinary subject that must be fully integrated into the whole planning and development system of a country in order to ensure that it is properly addressed. All relevant sectors (e.g., land use, pollution control, agriculture) can impact on biodiversity in the small island developing States and should therefore be taken into account.

(d) Lack of inventory of biological resources. The effective conservation of the biological resources of the small island developing States also requires information and data on the types and numbers of biological organisms. Such information, however, is often unavailable, making it difficult to plan mitigating measures.

(e) Lack of integrated strategies for the management of terrestrial and marine biodiversity. Biodiversity conservation is an interdisciplinary field, given that activities in many sectors can have an impact on it. Most small island developing States, however, have not adopted integrated strategies to deal with the conservation of biodiversity.

VI. Priorities for future action

A. At the national and regional level

8. Priorities for the future identified on the basis of national, regional and international reports include:

(a) Development and implementation of national biodiversity strategies and action plans. Completion and implementation as called for under article 6 of the Convention on Biodiversity, of comprehensive national biodiversity strategy and action plans that, by individual country, (i) assess the state of knowledge on biodiversity; (ii) identify vulnerable and endangered ecosystems and species; (iii) identify activities and processes that endanger biodiversity; and (iv) contain strategies for the protection and sustainable use of island biodiversity.

(b) Development of community-based conservation areas and action strategies. Development of community-based conservation areas and action strategies, as a basis for effective biodiversity conservation by landowners, resource users and non-governmental organizations, in particular in those instances in which the Governments of small island developing States have limited capability to successfully implement biodiversity conservation initiatives. This would include (i) documentation of traditional ethnobiological knowledge, including identification of ecosystems, species and genetic types that are endangered or in short supply at the community level; (ii) factors responsible for their endangerment, and actions that can be taken to address the situation; and (iii) identification of knowledgeable persons who should be formally recognized and made integral participants in biodiversity conservation at the national and local levels. Legally protected areas must also be properly managed and designed to act as true reservoirs and nurseries for adjacent areas. The protected areas should include no-take and buffer zones, to severely restrict developments.

(c) Development of national alien species action plans. Developing and implementing national alien species action plans to prevent the introduction of, and facilitate the eradication and control of the spread of invasive, or potentially invasive, alien plants, animals, micro-organisms and genetic types in the fragile small-island environment. This also would include the development of codes of conduct and frameworks of legislation for the control of invasive and exotic plant and animal species in small island developing States in view of their potential negative impact on indigenous or endemic species. This priority would involve developing case studies and best practices and the

dissemination of lessons learned for dealing with global problems concerning invasive species that threaten biological diversity.

(d) Strengthening of education of island biodiversity. Strengthening of formal and non-formal education on biodiversity in the small island developing States, and its past and present importance as a foundation for sustainable island development. This should include the development of curriculum materials based on traditional ethnobiological knowledge.

(e) Implementation of international conventions. Promotion of international and regional cooperation and implementation of international conventions (e.g., the Convention of Biological Diversity, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, regional seas conventions), treaties and other mechanisms to facilitate the successful conservation of island and marine biodiversity at the international and regional levels.

(f) Development of tools for sustainable use of biological resources. Improvement of existing criteria and methods for identifying biodiversity indicators in the small island developing States, specifically for use in national planning efforts. The resulting indicators also can form part of the vulnerability index being developed for small island developing States Developing plans, strategies and criteria to promote ecotourism is a priority for most small island developing States.

B. At the international level

9. Future action at the international level is needed in the following areas:

(a) Conservation of species. Support to small island developing States at the national and regional levels to identify, evaluate and conserve basic genetic resources for future generations. This may include: (i) the establishment of conservation systems; (ii) support for initiatives to enhance and strengthen ecosystems and germplasm conservation and use, in particular for national inventories and assessments of resource bases for ecosystems and germplasm conservation and use and identification and prioritization of needs and potential applications for enhanced regional cooperation; (iii) provision of training and technical assistance to small island developing States for developing inventories of flora, fauna and ecosystems.

(b) Habitat protection: (i) assistance to small island developing States to help them develop and implement plans for controlling land-based sources of pollution in line with the goals of the Global Programme of Action for the Sustainable Development of Small Island Developing States; (ii) support for regional institutions for the development of higher-yielding crop and animal varieties, including development of a database of these sources; (iii) assistance to small island developing States in developing or adopting and promoting good land use systems, especially in farming; (iv) assistance to small island developing States is needed for the diversification of their economies as a means of reducing the pressure of farming, which often leads to habitat destruction; this could be done by facilitating the formulation of mechanisms for international cooperation allowing small island developing States more access to markets under the World Trade Organization framework, as a means of facilitating economic diversification and biodiversity conservation.

(c) Control of alien invasive species. Building the capacity of the small island developing States to assess and manage problems related to alien invasive species against native species in protected areas is needed, including: (i) provision of technical assistance to develop and/or strengthen legislation on the control of alien species; strengthening of animal and plant protection quarantine services to ensure that international import and export standards are met; provision of assistance for the establishment of port reception facilities and the related waste disposal systems, for instance, sanitary land fills and incineration, including the control of alien species introduced via ship-generated waste.

(d) Implementation of conventions. Needed actions include: (i) provision of support for the participation of the representatives of small island developing States at meetings of the States parties to the Convention on Biological Diversity to facilitate appropriate consideration of the priorities of the States; (ii) support for the fuller participation of small island developing States in the United Nations Framework Convention on Climate Change, given the potential impacts of climate change on biodiversity; (iii) elaboration of issues on intellectual property rights as they pertain to the access to and utilization of genetic resources; this will include development of relevant awareness and publicity material (e.g., brochures and the convening of regional workshops).

(e) Food production. Actions needed include: (i) development of a database of crop and livestock cultivars with optimum production potentials, good resistance to diseases, quality characteristics and adaptability to local environment as a basis for sustainable intensification and growth of food production; (ii) provision of support for small

island developing States in accessing improved cultivars and seeds, as well as adapting them to local conditions.

(f) Negotiating capacity. Support is needed to facilitate the negotiations of fishing agreements between small island developing States and owners of foreign fishing fleets, taking into account the concerns of States within the framework of the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks, as well as the participation of small island developing States in the implementation of the agreement reached at that Conference.

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Report of the Secretary-General

Addendum

National institutions and administrative capacity in small island developing States*

Contents

		Paragraphs	Page
	Introduction	1	3
I.	Progress in strengthening national institutions and administrative capacity	2	3
II.	Major initiatives	3–4	3
	A. At the national level	3	3
	B. At the regional and international levels	4	4
III.	Major problems and constraints	5–6	5
	A. Problems	5	5
	B. Constraints	6	5

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99-01230 (E) 020299

IV. Priorities for future action 7–8 6

A. At the national level 7 6

B. At the regional and international levels 8 6

Introduction

1. National institutions and administrative capacity play an essential role in promoting sustainable development. Recent experience in the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States[1] (hereinafter referred to as the Programme of Action) attests to the significance of that role. By and large, more progress has been made in those small island developing States with, than in those without, proper institutions in place. Effective institutions and administrative capacity are a prerequisite of sustainable development.

I. Progress in strengthening national institutions and administrative capacity

2. Most small island developing States have realized that their inherent, characteristic disadvantages make it all the more necessary for them to develop effective institutions and administrative capacity in order to meet the multitude of challenges arising from the imperatives of resource conservation and environmental protection. Recent country assessments reveal that since the Global Conference on the Sustainable Development of Small Island Developing States in 1994, a substantial number of small island developing States have taken initiatives aimed at institutional strengthening and administrative capacity-building. These initiatives include the following:

(a) *Establishment of a high-level policy-making or coordinating body*. A considerable number of small island developing States have set up high-level bodies to guide and coordinate sustainable development policies and measures. These bodies often assume the institutional structure of a high-level commission or council headed by the head of Government or a senior minister, with a broad membership of government departments and, in a number of cases, major groups and private sector representatives. While not all such bodies have policy-making mandates, most have advisory and coordination functions among their principal responsibilities. Their establishment and leadership have provided a catalyst for energizing action;

(b) *Establishment of specialized bodies*. Some small island developing States have set up new offices or units within government departments and have entrusted them with responsibilities for specific sectors, such as waste management or fisheries resources. In other small island developing States, existing structures have been upgraded and strengthened in terms of administrative status, manpower and funding. The reinforcement has enabled them to deal with the emerging problems more effectively;

(c) *Enactment of new legislation*. A large number of small island developing States have enacted legislation to chart a new course for economic growth and development while complying with regional and international legal instruments. Such steps are often followed by the formulation of a national strategy addressing different sectors and issues in the broader context of sustainable development. The enactment of new laws and the subsequent promulgation of executive rules and regulations have provided an overall legal and policy framework for strengthening institutions and building administrative capacity;

(d) *Introduction of environmental impact assessment (EIA) and economic instruments*. In some small island developing States, environmental impact assessment (EIA) has been applied to an increasing number of projects, making it an important environmental management tool. In some others, economic instruments such as user fees, deposit refunds and tax incentives have been introduced on a limited scale with a view to promoting behavioural changes in favour of sustainable development practices while at the same time generating revenues to help strengthen institutional and administrative capacity. In such instances, appropriate use of economic instruments is becoming an effective administrative tool for environmental management and resource conservation.

II. Major initiatives

A. At the national level

3. Examples of successful initiatives for strengthening national institutions and administrative capacity include the following:

(a) In the Federated States of Micronesia, a President's Council on Environment and Sustainable Development has been established to coordinate and oversee sustainable development activities of national government departments. In Fiji, a National Environment Strategy has been formulated following a comprehensive review of the status of the environment. This has been followed by the drafting of new comprehensive legislation to give effect to the goals identified in the National Environment Strategy. Within the Government, the status of the Environment Unit has been upgraded to that of a full Department. Similarly,

the Department of Forestry and the Mineral Resources Department have set up their own environmental units staffed by trained environmental officers in the respective sectors. The two departments have also developed environmental policies for their areas of responsibility;

(b) In Barbados, a national commission on sustainable development has been established, with broad representation from various ministries and the involvement of the private sector and major groups. A major responsibility of the commission is to facilitate national level coordination of sustainable development programmes and to promote public awareness. Another significant initiative taken by Barbados is the establishment of a Chemical Substances Technical Working Group on the Management of Hazardous Substance, comprising representatives from relevant agencies including the private sector, the workers' union, and academia. The Working Group has been working on issues of legislation and safety guidelines to cover the imputation, transportation, storage, use and disposal of toxic chemicals and their wastes. The issue of an emergency response protocol has also been under consideration;

(c) In Mauritius, a national environmental commission has been set up, chaired by the Prime Minister, with a broad membership, including ministers responsible for economic planning, finance, education, science and technology, energy and natural resources, tourism, industry, health and justice, and representatives of local government. A key mandate of the commission is to ensure coordination and cooperation among public departments, local authorities and other organizations engaged in environmental protection programmes;

(d) In Cyprus, efforts have been made to use economic instruments as a new tool for reorienting tourism development. Various new tax incentives have been introduced to diversify and upgrade tourism products. Fiscal instruments are used to encourage sound land-use and coastal zone practices. Similar instruments are being applied in other tourism-related sectors so as to improve the overall quality and balance of sustainable tourism.

B. At the regional and international levels

4. The past few years have seen intensified regional and international cooperation in institutional strengthening and capacity-building in small island developing States. Examples of successful initiatives include the following:

(a) The Inter-American Development Bank (IADB) in collaboration with the University of the West Indies (UWI) successfully completed a five-year multisectoral project entitled "IADB/UWI Environmental Monitoring Project"; this largely institutional strengthening and capacity-building project involved the establishment of a permanent environmental database; training in requisite skills; the establishment of baseline water, soil and air data; the development of image analysis maps; and the building of data interpretation capability and sampling criteria;

(b) Through a five-year (1997–2002) grant, the United Nations Educational, Scientific and Cultural Organization (UNESCO) is supporting a project entitled "UNESCO Associated Schools Caribbean Sea project (CSP)", which aims at building capacities in the management of coastal and marine resources; a key objective of the project is capacity-building at the national and regional levels through teacher training, curriculum development, design and production of new teaching materials, environmental education camps and field trips for students aimed at skills development;

(c) The South Pacific Regional Environment Programme (SPREP) has coordinated the preparation of national environmental management strategies (NEMS) throughout the region, with assistance from the Asian Development Bank, the United Nations Development Programme (UNDP) and Australia; the process has included a review of relevant legislation, preparation of a state-of-the-environment report, national seminars and the development of a national environmental strategy for each country; through a similar initiative, the South Pacific Commission has facilitated the work of the Pacific Sustainable Development Network, which is designed to strengthen the capacity of institutions in the region and to develop effective and efficient systems for information exchange;

(d) Through its Capacity 21 funds, UNDP has provided assistance to the Programme of Capacity-Building for Sustainable Development in the South Pacific; the programme is geared towards assisting the Pacific small island developing States in strengthening governmental and non-governmental capacity for sustainable development; it aims at fostering the participation of the general public, including women, in development planning and at incorporating land and marine tenure systems as well as management practices in future policies; also utilizing Capacity 21 resources, UNDP has supported two projects in Sao Tome and Principe aimed at establishing intersectoral mechanisms that will facilitate the public and private sectors' participation in the formulation of national sustainable development plans;

(e) Belgium, Sweden and the United Nations Environment Programme (UNEP) have collaborated in providing support to the Regional Coordinating Unit for the Eastern Africa Subregion in an effort to strengthen the capacity of African small island developing States to deal with environmental disasters; the main objective of this project is to upgrade the capacity of small island developing States to respond to environmental disasters including oil spills in the Eastern Africa subregion; the project also deals with management of coastal and marine resources in the subregion.

III. Major problems and constraints

A. Problems

5. While most small island developing States recognize the compelling need to strengthen their institutions and administrative capacity, they have encountered a number of difficulties in their efforts to implement measures to that end. While each country has its unique circumstances, the major problems common to them include the following:

(a) *Inadequate enforcement of legislation*. For those small island developing States that have enacted new legislation, weakness of enforcement has emerged as a major problem; the new laws on resource conservation and environmental protection, essential as they are, take time and substantial resources to enforce; among other things, enforcement requires training of personnel and upgrading of law enforcement structures; there are indications that suggest a weakening, in recent years in several small island developing States, of the commitment to enforce the laws; in some small island developing States, enforcement has become sporadic; individual instances of resistance to enforcement, often associated with economic considerations, have compounded the problems;

(b) *Lack of coordination*. Despite the fact that most newly created high-level bodies in small island developing States are entrusted with the functions of coordination, an abundance of problems remain in this area; by its very nature, coordination is a difficult undertaking and is certainly made more so in small island developing States by the variety of intersectoral issues involved, the different types of interdisciplinary expertise required and the large number of agencies concerned; country assessments suggest that most small island developing States remain at the lower end of the performance curve in the coordination of sustainable development policies and measures;

(c) *Lack of proactive strategy*. Recent experience in small island developing States shows that government action in institutional and capacity-building is often taken in response to emerging needs and/or new regional/international obligations, while emergency responses are necessary, Governments of small island developing States need to adopt a more proactive stance in institutional and administrative capacity-building through a vision of the country's long-run socio-economic development and its institutional and administrative capacity requirements; such a proactive stance is necessary in order for small island developing States to improve planning, and enhance their capacity for tackling future problems;

(d) *Low priority*. A number of small island developing States have not yet accorded high priority to institution- and capacity-building; some of them have had to deal with more pressing problems such as natural disasters and macroeconomic imbalances; the recent economic crisis has had direct impact on some small island developing States where deteriorations in economic performance have further reduced scope for action for institutional and administrative capacity-building;

(e) *Lack of recognition*. Despite the great strides in environmental awareness, the problem of inadequate public recognition of the importance of institutions dealing with resource conservation and environmental protection has impeded progress in strengthening these institutions and their capacity; the lack of public recognition has also affected the effectiveness of the coordination of sustainable development policies and measures, as the coordination mechanisms are not always accorded the authority and recognition due them.

B. Constraints

6. Assessments of country experiences in institutional and administrative capacity-building have highlighted a number of constraints in small island developing States. Those shared by most small island developing States include the following:

(a) *Limited availability of human resources*. The fact that the majority of small island developing States have very small populations seriously restricts their ability to staff specialized resource and environmental management institutions; the brain drain from many small island developing States, and the traditional dependence on expatriates in some small island developing States for specialized expertise, have hindered efforts at institutional and administrative capacity-building; lack of training at an

adequate level has further weakened the local capacity to deal with complex issues;

(b) *Lack of financial resources*. In several small island developing States that have established or upgraded institutions charged with resource conservation and environmental protection, inadequate national budgets have seriously limited the scope of their operations; even in situations where local expertise exists for dealing with environmental protection and resource management problems, shortages of funds hinder adequate action.

IV. Priorities for future action

A. At the national level

7. Priorities for future action at the national level include the following:

(a) Governments of small island developing States should take a proactive stance towards institutional and administrative capacity-building; they should further strengthen their national sustainable development bodies by enhancing their political and legal status, increasing their staffing levels and improving their modalities of operation; those that have not established such bodies should take immediate action to ensure that a national mechanism for guiding and coordinating sustainable development policy is put in place and is given adequate status and resources for effective functioning;

(b) Specialized institutions devoted to specific sectors should be established and provided with adequate staff and budgetary resources for their operations; such institutions are required particularly to deal with major resource conservation issues, such as those involving fisheries, coastal zones and biodiversity;

(c) Governments of small island developing States should ensure that environmental laws and regulations are fully enforced and that national sustainable development strategies are implemented; to that end, monitoring and follow-up activities need to be carried out; particular attention should be paid to the training of civil servants and technical staff in order to enable them to effectively implement the relevant legislation and regulations; in this context, national action should be taken to promote the use of EIAs and economic instruments.

B. At the regional and international levels

8. Priorities for action at the regional and international levels include the following:

(a) Governments of small island developing States should both expand and deepen their regional and subregional cooperation in national institutions and administrative capacity-building, especially in areas where they are lacking in expertise and where joint activities in research and training could help to overcome national resource constraints, facilitate the exchange of national experiences and increase the cost-effectiveness of regional cooperation;

(b) Regional institutions should be provided with adequate resources by member States to carry out research and training activities, undertake critical assessments of priorities and needs, and facilitate the exchange of experience and dissemination of information; regional institutions with the right expertise should assist member countries in the preparation of new legislation, as necessary, and in the formulation and implementation of national strategies;

(c) The international community should provide adequate financial resources to small island developing States so as to enable them to carry out necessary institutional reforms and changes and to improve their national administrative capacity; agencies of the United Nations system and other organizations should increase training activities to help update and improve the skills of staff engaged in sustainable development activities; organizations with the appropriate technical capacity, including funds and programmes and specialized agencies, should also provide technical assistance or advisory services to small island developing States in respect of building up their national institutions;

(d) Bilateral donors should (i) provide financial and technical support to small island developing States to facilitate their ratification and implementation of relevant international instruments; (ii) help provide training opportunities and facilities, including scholarships, particularly in areas where small island developing States suffer from serious lack of local expertise; (iii) support current efforts at building an information network for small island developing States (SIDSNET) so that they may have better access to information on state-of-the-art technology and become active participants in the exchange of experience and dissemination of information; and (iv) provide financial and technical assistance to the regional organizations of

small island developing States to enable them to adequately meet the technical assistance needs of member countries.

Notes

[1] *Report of the Global Conference on the Sustainable Development of Small Island Developing States, Bridgetown, Barbados, 25 April–6 May 1994* (United Nations publication, Sales No. E.94.I.18 and corrigenda), chap. I, resolution 1, annex II.

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Addendum

Regional institutions and technical cooperation for the sustainable development of small island developing States*

Contents

		Paragraphs	Page
I.	Introduction	1	3
II.	Progress achieved in strengthening regional cooperation	2–9	3
	A. Institution-building	2–5	3
	B. Technical cooperation activities of regional institutions	6–9	4
III.	Constraints faced by regional institutions	10–13	4

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IV. Recommendations for future action 14–22 5
A. National level 14–15 5
B. Regional level 16–18 5
C. International level 19–22 5

I. Introduction

1. It is generally agreed that small island developing States stand to gain much from close cooperation at the regional and subregional levels. As a matter of fact, regional and subregional cooperation offers the only opportunity for small island developing States to avail themselves of economies of scale in a number of areas, such as higher education and training, air and sea transport, technology assessment, and prevention of dumping of hazardous and toxic wastes and sewage in regional areas. In those and other areas, regional cooperation will be conducive to effectiveness and enhanced efficiency through the elimination of duplication of national facilities and efforts and through the maximization of complementarities among small island developing States. Those considerations have certainly not escaped the attention of small island developing States. Considerable effort at regional cooperation has already been made with regard to a variety of activities.

II. Progress achieved in strengthening regional cooperation

A. Institution-building

2. Small island developing States in the Pacific region have developed a well organized structure of eight regional intergovernmental organizations, each with a particular focus funded by member contributions: the Forum Fisheries Agency, the Forum Secretariat, the Pacific Islands Development Programme, the South Pacific Commission, the South Pacific Regional Environment Programme (SPREP), the South Pacific Geoscience Commission, the Tourism Commission of the South Pacific and the University of the South Pacific. In order to avoid duplication and harmonize their activities, the above organizations have established the South Pacific Organizations Coordinating Committee, a key function of which is to coordinate regional programmes. In 1995, an agreement was reached to establish SPREP, formerly part of the South Pacific Forum, as an independent intergovernmental organization providing cooperation and assistance for the protection and improvement of environment in the South Pacific. In 1997, Governments of Pacific small island developing States signed the Waigani Convention on the prohibition of the import into the South Pacific and the control of transboundary movement and management within the South Pacific of hazardous wastes, and designated SPREP as the secretariat for the Convention.

3. In addition to strengthening their own regional institutions, most small island developing States in the Asia and Pacific region are members or associate members of the Economic and Social Commission for Asia and the Pacific (ESCAP), and participate actively in the annual sessions of ESCAP's Special Body for Pacific Island Countries and meetings of ESCAP legislative bodies. To further the sustainable development objectives of small island developing States in the Asia and Pacific region, ESCAP has established the ESCAP Pacific Operations Centre (ESCAP/POC) in Vanuatu.

4. In the Caribbean, the subregional headquarters of the Economic Commission for Latin America and the Caribbean (ECLAC) for the Caribbean, in collaboration with the Caribbean Development and Cooperation Committee (CDCC) and the Caribbean Community (CARICOM), has served as the regional coordination mechanism for the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States. That mechanism collaborates with a number of subregional intergovernmental organizations with a broad range of mandates, ranging from specific programme areas to comprehensive sustainable development programmes, including the Caribbean Centre for Development Administration, the Caribbean Conservation Association, the Caribbean Council for Science and Technology, the Caribbean Disaster Emergency Response Agency, the Caribbean Environment Health Institute, the Caribbean Tourism Organization, the Association of Caribbean States, the Organization of American States (OAS) and the Organization of Eastern Caribbean States (OECS). Available information indicates that member States of some of the organizations, such as OECS, have taken increasingly greater financial responsibility for their respective environmental programmes. In the case of OECS, member States contribute some 62 per cent to the secretariat's staff salaries and 30 per cent to administrative costs.

5. In the African region, the Economic Commission for Africa (ECA) has the mandate to monitor and coordinate the implementation of the Programme of Action but has not demonstrated much engagement. Only one regional intergovernmental organization in the region — the Indian Ocean Commission (IOC), whose membership includes islands in the southwestern Indian Ocean — is actively engaged in the implementation of the Programme of Action. Three small island developing States are members of IOC, whose objectives are to strengthen social economic and political links among the people of its member States and to work towards improving their quality of life through enhanced cooperation. Member States of IOC see

cooperation in the subregion as an indispensable means of attaining sustainable development goals that are beyond the capacity of individual member countries.

B. Technical cooperation activities of regional institutions

6. A number of regional institutions have stepped up their offers to expand technical cooperation for the implementation of the Programme of Action in recent years. Information received from a number of regional institutions indicate, however, that they are still unable to meet the technical assistance needs of small island developing States in their respective regions on account of a number of constraints, which are briefly outlined in section III below. Technical assistance provided by regional institutions serve three broad purposes: strengthening of human resources capability for natural resources management, mainly through workshops and seminars; preparation of national action plans and programmes and policy briefs for sustainable development; and execution of sustainable development projects. Some highlights of technical cooperation activities of selected regional institutions are provided below.

7. In the follow-up to the Global Conference on the Sustainable Development of Small Island Developing States, ESCAP has undertaken more than 150 advisory and consultancy service missions at the request of small island developing States in the Asia and Pacific region. Among other things, ESCAP is currently implementing a region-wide project, with a Pacific islands component, on integrating environmental considerations into the economic decision-making process, with the eventual goal of developing modular training materials on various aspects of best practices through national studies. It is also working on a technical cooperation among developing countries project on enhancing trade and investment linkages between Pacific island countries and other countries in the region. ESCAP/POC has undertaken a number of activities aimed at strengthening the capacity of several non-United Nations regional bodies in collaboration with them, in such areas as organizational restructuring, standardization and quality management, and adjustment and reform. ESCAP/POC has cooperated with non-United Nations regional bodies in developing subregional and national programmes and projects that fulfil the goals and objectives of the Programme of Action. Its approach to implement programmes involves the sharing of ESCAP technical expertise with non-United Nations regional bodies and with small island developing States. SPREP has provided technical assistance for the development of national environmental management strategies in 12 Pacific small island developing States, and is currently carrying out an assessment of environmental legislation in several Pacific island countries in collaboration with UNEP. It is also undertaking environmental law training activities in the framework of the Capacity 21 programme in selected islands, and has planned a workshop on environmental treaties and conventions involving all Pacific island countries.

8. In the Caribbean, in collaboration with selected regional institutions, OAS is currently providing technical assistance for the execution of three major projects: assessment of coastal and marine problems; assessment of the current state of effluent disposal in the region; and comprehensive review of integrated coastal zone management legislative systems. An important aspect of those projects is to provide policy guidance for action. OECS is providing technical assistance to member States on request through its technical cooperation among member States mechanism, which involves accessing expertise resident within the public sector of one member State to help another; provision of financial resources for training; provision of technical information on natural resource management; and preparation of policy briefs.

9. In Africa, IOC provides technical assistance to member States through its permanent regional technical committee on environment, which is made up of high-level technical cadres from member States. The technical committee is responsible for identifying projects in member States and for formulating project proposals for consideration by IOC. It is also responsible for liaising with funding agencies to secure funding for approved projects and for executing the projects in member States. The technical committee is assisted by an ad hoc management committee for each approved project, which oversees the implementation of the project.

III. Constraints faced by regional institutions

10. Information received from regional institutions indicate that the effectiveness of regional institutions generally in delivering programmes and technical assistance is undermined by a number of factors at the financial, technical, institutional and policy levels. The single most important constraint faced by most regional institutions is inadequacy of financial resources to meet immediate needs of member States. As a result, several regional institutions are unable to carry out their core functions, including

provisions of international agreements, and remain overdependent on project funding.

11. Next in importance are the constraints posed by inadequacy of technically qualified manpower at the regional and subregional levels, as well as at the level of regional institutions. That deficiency impairs the ability of institutions to meet the demands of member States for technical assistance, and results in weak negotiating capacity in international forums, which is often reflected in small island developing States being provided with assistance that does not meet their expressed needs.

12. At the institutional level, a major constraint is the deficiency of regional mechanisms for coordinating the implementation of the Programme of Action, particularly in Africa and the Caribbean. In Africa, no regional coordination mechanism has been established. IOC, which includes major elements of the Programme of Action in its work programme, is not an official regional coordination mechanism: it does not comprise all African small island developing States, and has very meagre financial support. In the Caribbean, jointly with the CARICOM secretariat, ECLAC/CDCC has thus far served as a coordination mechanism only on an interim and therefore insecure basis, also with meagre financial support.

13. At the policy level, there is a lack of properly articulated policies on sustainable development, and very little or no integration of environmental dimensions in socio-economic policy planning at the national level, which makes it difficult to harmonize priorities at the regional and subregional levels, and to develop coherent and subregional programmes. Often there is considerable hesitancy on the part of national decision makers to implement recommendations of regional institutions or even decisions of regional intergovernmental bodies. In part, this is linked to the insufficiency of human and financial resources available for costly regional projects.

IV. Recommendations for future action

A. National level

14. To strengthen regional cooperation it will be necessary for all small island developing States to explicitly integrate environmental dimensions in the long-term policy planning process at the national level, and to identify priority areas for regional implementation in order to enable the development of coherent regional and subregional programmes.

15. In the recent past, small island developing States that are members of some regional institutions have increased their financial support for the running of those institutions. In order to enhance their effectiveness such support needs to be further strengthened so as to make it commensurate with the needs of all regional and subregional institutions. In some small island developing States regions, there is a need for greater political commitment to the implementation of regional programmes.

B. Regional level

16. Efforts to strengthen coordination among regional and subregional institutions have begun in the Pacific. Such efforts are needed in all small island developing States regions. For effective regional coordination of the implementation of the Programme of Action, there is a need to establish permanent regional coordination mechanisms and to provide them with resources commensurate with their needs from national and international sources. Effective permanent regional coordination mechanisms will also serve to facilitate interregional cooperation, of which there has been little, if any, to date.

17. Regional institutions need to make efforts to strengthen their own technical capacity in order to meet technical assistance needs of member States.

18. Regional and subregional institutions need to work more closely with national Governments to identify programmes and projects for the development of realistic regional and subregional programmes in the short and medium terms.

C. International level

19. In view of the obvious benefits to be derived from regional cooperation, the international community needs to adequately supplement the financial resources provided by member States for the support of regional institutions.

20. In order to enable regional institutions to effectively meet the technical assistance needs of member States, there is a need for the international community to assist regional institutions in building their technical capacity to levels that are commensurate with the needs of member States.

21. Although the prime responsibility for the execution of regional programmes and projects rests with small island developing States Governments, in view of the meagre resources of individual small island developing States and

the high costs of regional programmes there is an obvious need for adequate financial support from the international community for timely and effective implementation of regional programmes.

22. Relevant United Nations regional commissions and other United Nations bodies need to demonstrate a greater level of engagement in the implementation of the Programme of Action, particularly in the African region.